Journal of Business Economics (2022) 92:1559–1602
https://doi.org/10.1007/s11573-022-01112-w

ORIGINAL PAPER

The "C" in crowdfunding is for co-financing: exploring participative co-financing, a complement of novel and traditional bank financing

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Accepted: 9 August 2022 / Published online: 5 October 2022

Abstract

We explore the potentials of participative co-financing as a means for regional banks to integrate an innovative financing technique that enhances their strengths. Our goal is to interest platform operators, decision-makers of regional banks, and researchers in the potentials of participative co-financing. We define participative co-financing as capital provision, where professional financing sources provide one part, and the other is supplied via participative crowdfunding. We claim that crowdfunding and regional banks are compatible by common interests. We explore potentials emanating at the intersection of both fields by drawing on entrepreneurship and finance literature. Eventually, we bridge the gap between both fields of research. To guide our research, we develop a framework featuring the intersection of crowdfunding and regional banks. We ask: Which potentials affect the intentions of decision-makers in regional banks to offer participative co-financing? The technology acceptance model (TAM) provides a theoretical foundation for our analysis. We conduct a twofold analysis by looking at the direct effects of potentials first and acceptance according to the TAM second. Thereby we consider the intention to offer lending- and equity-based co-financing. We surveyed decision-makers from an association of German savings banks and derived 108 answers. We show that regional banks generally accept participative co-financing as an innovative financing technique. The most likely model is lending-based co-financing, with individual persons, startups, and SMEs as target groups. Decision-makers hope to profit from cross-selling and being perceived as innovative. Nevertheless, further research and trials are necessary to advance participative co-financing.

Keywords Banking · Co-financing · Crowdfunding · Crowdinvesting · Financing · Participation

JEL Classification F65 · G21 · G23 · R11

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1 Introduction

Regional banks have come under pressure in recent years due to newly imposed regulations and various digital disruptions such as mobile banking, robo-advisory, and token-based services (Flögel and Gärtner 2018; Gomber et al. 2017; Warner and Wäger 2019). The challenge is not only technical since digitization disrupts financial market structures and introduces new business processes and models (Gomber et al. 2017; Jünger and Mietzner 2020; Warner and Wäger 2019). Additionally, regional banks face challenges imposed by digitization, which lead to centralization (Diener and Špaček 2021; Flögel and Gärtner 2018), increased comparability, and transparency between competitors (Diener and Špaček 2021; Gomber et al. 2017).

We define regional *banks* as commercial savings banks that are legal entities under public and communal sponsorship, and often national association members. Their tasks include providing financial services such as saving and building capital and providing debt to anybody within their geographic boundaries, serving with a commonwealth-orientation (Manger-Nestler 2020). Therefore, traditionally, regional banks are closely connected with their markets, communities, and customers and offer reliable, decentralized infrastructure and financing (Chiorazzo et al. 2018; Flögel and Gärtner 2018). Thus, regional banks know their regions' stakeholders and their needs well. However, regional banks might lack the resources and innovativeness to address current challenges (Diener and Špaček 2021). For the sake of readability, henceforth, we use the terms "regional bank" and "bank" synonymously.

Banks should design sustainable business models and pursue strategies that focus on their strengths to cope with current challenges. They should make techniques part of their innovation strategy that enhances their strengths. In this study, we explore the potentials of participative co-financing as a means for regional banks to integrate an innovative financing technique to enhance their strengths. In brief, by participative co-financing, we refer to a financing technique that combines established bank financing and innovative crowdfunding.

Schwienbacher and Larralde (2010: 4) define *crowdfunding* as "an open call [to participate], mostly through the internet, for the provision of financial resources […] in exchange for […] some form of reward to support initiatives for specific purposes". Early research on crowdfunding has developed many similar definitions for describing fundamental characteristics of crowdfunding (e.g., Belleflamme et al. 2014; Kleemann et al. 2008; Schwienbacher and Larralde 2010). Thereafter, research has focused on classifying different crowdfunding types (Ahlers et al. 2015; Bradford 2012). Liang et al. (2020) present a comprehensive overview of the literature on crowdfunding success factors.

Based on the definitions of regional banks and crowdfunding, we claim that regional banks and crowdfunding are compatible by common interests. Both share the primary objective to finance a specific purpose (Belleflamme et al. 2014; Deutscher Sparkassen- und Giroverband 2019). Crowdfunding enables a group of people to participate in a project through online services (Belleflamme

et al. 2014; De Buysere et al. 2012). Similarly, regional banks enable participation by maintaining a close relationship with diverse stakeholders to foster and finance regional activities (Chiorazzo et al. 2018; Deutscher Sparkassen- und Giroverband 2019). Furthermore, banks strive to digitize their processes and services (Deutscher Sparkassen- und Giroverband 2019; Flögel and Gärtner 2018). In contrast, crowdfunding is already digital by design (Belleflamme et al. 2014; De Buysere et al. 2012; Kleemann et al. 2008). Finally, since crowdfunding and banks are market-oriented (Deutscher Sparkassen- und Giroverband 2019; Flögel and Gärtner 2018; Mollick 2014; Parhankangas and Renko 2017), a combined approach might allow banks to enhance their market orientation.

We propose participative co-financing as a useful technological innovation that advances the banks' business model multifacetedly. If banks offer a hybrid form of crowdfunding and established banking by combining their experiences and regional connectedness with crowdfunding capabilities, potentials for new business opportunities, products, and services emanate at the intersection. Moreover, by offering participative co-financing, potentially, banks can address target groups that formerly were out of scope.

Building on previous definitions of crowdfunding, we define *participative co-financing* as follows: Participative co-financing describes the provision of capital for a venture, project, or any initiative, where a professional source of financing provides one part of the capital and the other part is provided by a loosely defined group of people, which is organized via the internet and only participates to support the specific purpose for which capital is acquired (following Belleflamme et al. 2014; Schwienbacher and Larralde 2010).

In this study, we approach banks with the concept of participative co-financing, coming from the field of crowdfunding research. While banking research is situated in the field of financing, crowdfunding is much more common in the field of entrepreneurship.[1] With this study, we bridge between both fields of research. Some banks have already conducted initial initiatives to use participative financing. However, to the best of our knowledge, the academic literature holds no evidence about the banks' genuine intention to integrate participative co-financing as a permanent additional product offer. Gomber et al. (2017) state that research has not yet addressed the competition between crowdfunding platforms and banks and, thus, whether they complement or substitute each other. This study looks at crowdfunding and established regional banking as complements. The following research question frames our investigation:

[1] To quantify the popularity of crowdfunding studies in both fields of research, we conduct a brief analysis of journals from both fields that mention either "crowdfunding" or "crowdinvesting" in their title. We only considered journals that are listed in the categories "banking and finance", "entrepreneurship", or "technology, innovation, and entrepreneurship" and are rated as "A+", "A", or "B" journals according to the JOURQUAL 3 ratings by the German Academic Association of Business Research (VHB). This analysis reveals 45 journals in the field of financing and 21 journals in the field of entrepreneurship. In the field of financing research only 20 articles were identified. In the field of entrepreneurship, we identified 160 articles. The consultation of the VHB-list as well as the web-research via Web of Science was conducted on the 15th of February 2022.

Which potentials affect the intentions of decision-makers in regional banks to offer participative co-financing?

The theory of social capital provides an auspicious basis to investigate crowdfunding, as social capital determines crowdfunding performance (Cai et al. 2021). In addition, the theory is even more applicable in the context of participative co-financing. Regional banks can take advantage of the social capital and the innovation capacity that becomes available by enabling crowd participation (Medina-Molina et al. 2019). In the context of participative financing, social capital can be built internally, within the social network created by all participants, or externally, between participants and their independent social networks (Cai et al. 2021). Zheng et al. (2014) conceptualize that in participative financing (explicitly in crowdfunding), all participants can facilitate a reciprocal exchange of resources and share knowledge through a structural dimension (e.g., a network), through a relational dimension (e.g., trust), and a cognitive dimension (e.g., shared narratives). Additionally, social capital can create a bonding power between people who share resources for a collective purpose and bridge between the participants' intentions. Naturally, participative financing is a co-creative process that allows for developing, testing, and promoting the purpose collectively (Zheng et al. 2014). Social capital theory motivates why participative co-financing is advantageous for banks. However, social capital theory does not predict which factors influence the banks' decision to integrate and offer this innovative financing technique.

The integration of participative co-financing depends on the acceptance of this financing technique. Davis (1986) introduced the technology acceptance model (TAM) to explain determinants that influence the acceptance of information systems. The TAM depicts the effects of (1) perceived usefulness and (2) perceived ease of use (both are referred to as internal beliefs) as well as (3) external variables, such as experience, on behavioral intentions (Davis et al. 1989). We aim to investigate which potentials that reflect perceived usefulness and perceived ease of use affect the intention to use participative co-financing. According to the TAM, the intention to offer participative co-financing increases proportionally with the internal beliefs about this financing technique.

To answer our research question following the TAM, we investigate three aspects. First, we consider variables that might reflect the decision-makers' perceived usefulness of participative co-financing. Therefore, we explore potential synergies that emanate at the intersection of crowdfunding and regional banking. Furthermore, we examine new and existing target groups that banks can potentially address by offering participative co-financing. For some occasions, crowdfunding might be a more useful financing alternative than bank financing and vice versa (Xu et al. 2018). A hybrid approach might bridge the gap between both techniques (De Buysere et al. 2012), enabling banks to address new target groups and enhance their business (Davis 1989). Second, we consider variables that reflect perceived ease of use by examining potential synergies that emanate at the intersection of both financing techniques. Third, we assess the effect of experience as a commonly investigated external variable (e.g., King and He 2006; Legris et al. 2003; Venkatesh 2000). By experience, we mean the decision-makers' business-related experience with crowdfunding. Finally, we measure the decision-makers' intention to offer either of the

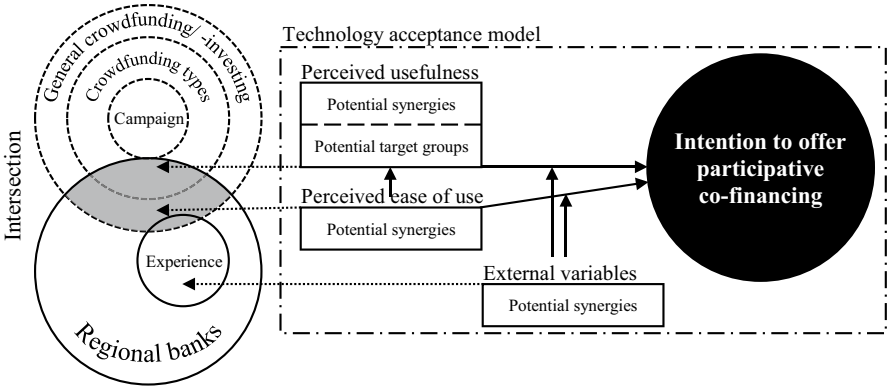


Fig. 1 Basic research framework (own figure based on Davis et al. 1989)

two prominent types of financial-return crowdfunding (lending-and equity-based, according to De Buysere et al. 2012) in a co-financing model. We focus on financial-return crowdfunding types. These types are more comparable with established banking compared to non-financial-return crowdfunding (donation- or reward-based, according to De Buysere et al. 2012).

Figure 1 shows our basic research framework. We focus on the intersection between the common interests of crowdfunding and regional banks. The intersection and compatibility of regional banking and crowdfunding is analyzable on three levels: First, on a general level, encompassing the key characteristics of crowdfunding. Second, on a crowdfunding type level which depends on the type of crowdfunding. Third, on a campaign level. However, the campaign level is very operational and rather immaterial for the strategic decision about integrating participative co-financing. Since we investigate the fundamental potentials of participative co-financing, our study is strategically oriented, and we exclude the operational campaign level from our analysis.

We conducted a survey among decision-makers and managers of independent subsidiaries from an association of German savings banks. To design the survey, we used a multi-sided approach. We consulted academic literature, insights from practitioners, and researchers from the relevant fields. The Fraunhofer Center for International Management and Knowledge Economy was one key partner. We received 108 complete and independent answers. The TAM provides the underlying theory for our research. Variables that reflect internal beliefs at a pre-integration stage of participative co-financing do not exist yet. We choose an exploratory approach to identify potentials that reflect internal beliefs and predict the decision-makers' intentions to offer participative co-financing.

We contribute to research on crowdfunding and alternative financing techniques, with the first study to investigate participative co-financing by exploring variables of acceptance. We provide initial insights on examining and designing participative co-financing and improving its acceptance, even before the system integration (Davis et al. 1989). Therefore, we develop a framework featuring the intersection

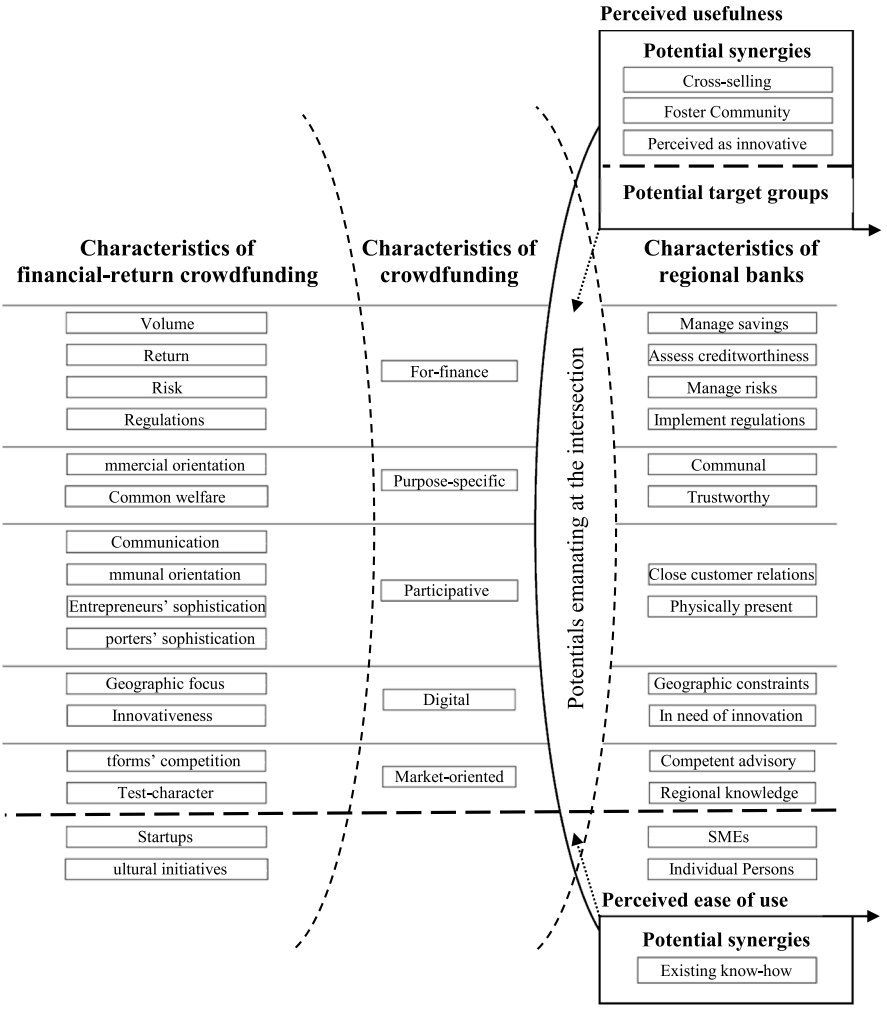


Fig. 2 Detailed research framework (own figure)

of crowdfunding and regional banking (Fig. 2). We provide evidence that decision-makers intend to use financial-return crowdfunding. We observe potential synergies and target groups that reflect the perceived usefulness of participative co-financing.

Furthermore, business-related experiences with crowdfunding positively moderate the perception of usefulness. Decision-makers generally accept participative co-financing. However, our findings indicate unawareness about emanating potentials. We aim to encourage future research to further develop adequate theories explaining the integration of participative co-financing (Fisch and Block 2021; Wennberg and Anderson 2020). We hope to inspire academics and practitioners from banks and crowdfunding platforms to advance participative co-financing. Ultimately, we encourage scholars and practitioners from regional crowdfunding platforms and

banks to further trial and investigate participative co-financing to gather experiences. More experience is the key to advancing participative co-financing successfully.

2 Background

The volume invested on crowdfunding platforms increased significantly over the last years in Germany. The amount invested on crowdfunding platforms, which offer a financial return, reached a peak volume of 417.7 million euros in 2019 (the year this study was conducted) (Harms 2021; Ziegler et al. 2019). Contributing to this development is a constant improvement of legal certainty in Europe which helps platforms and capital seekers to gain trust in crowdfunding (Kirby and Worner 2014; Mollick 2014). Furthermore, the market of crowdfunding platforms is in the process of consolidation (Ziegler et al. 2019).

In 2014 Slava Rubin, founder of the crowdfunding platform Indiegogo, claimed that soon every financial institution in the world would offer crowdfunding (Hecking 2014). On the contrary, banks could also view crowdfunding as a competitive financing technique, which prevents banks from exploring the potentials of crowdfunding (Gomber et al. 2017; Xu et al. 2018). Nevertheless, in Germany only few banks provide an example for offering either some type of crowdfunding on their own platform (e.g., DKB Crowdfunding GmbH 2022; GLS Gemeinschaftsbank eG 2022; VR-Crowd 2022) or cooperating with an independent crowdfunding platform (e.g., Sparkassen-Finanzportal GmbH 2022; Startnext GmbH 2022).

We ask, does participative co-financing become a part of the regional banks' innovation strategies and business models eventually? Above all, the integration of participative co-financing depends on the *acceptance of this financing technique*. In the context of participative co-financing, the intentions to offer this financing technique might depend on the type of crowdfunding.

We adopt a crowdfunding perspective on participative co-financing. Complementing the definition of crowdfunding by Schwienbacher and Larralde (2010: 4), crowdfunding platforms are market-oriented due to their demand-driven financing approach (Chan et al. 2019; Motylska-Kuzma 2018). Based on this understanding, we derive *five key characteristics* of crowdfunding: Crowdfunding is (1) for-finance, (2) purpose-specific, (3) participative, (4) digital, and (5) market-oriented. We utilize these key characteristics to approach regional banks, analyze their characteristics, and derive potentials for banks.

Figure 2 displays the context of Fig. 1 in more detail. It represents our research framework by magnifying the intersection of crowdfunding and regional banking and connects the emanating potentials with the theory of the TAM. We analyze the intersection based on the five key characteristics and use the TAM to investigate which potentials affect the acceptance of participative co-financing.

Figure 2 presents an overview of our research and summarizes the aspects we cover in the subsequent sections. Therefore, it lists the characteristics of crowdfunding and regional banking, which we consider when analyzing the compatibility of both means of financing. The level of general crowdfunding characteristics (Fig. 2, middle) entails the five key characteristics. The level of financial-return

crowdfunding types (Fig. 2, left) shows the respective specifications of the key characteristics. The level of characteristics for regional banks (Fig. 2, right) depicts characteristics that correspond to the key characteristics of crowdfunding. Horizontal dividers help to associate specific characteristics with the key characteristics of crowdfunding. The bottom of Fig. 2 shows typical target groups.

At the intersection of crowdfunding and regional banking emanate potential synergies and the potential to address existing and new target groups. Figure 2 lists the emanating potentials we identify and depicts how they reflect perceived usefulness (Fig. 2, upper right) and perceived ease of use (Fig. 2, lower right), according to our theoretical foundation, the TAM.

In Sect. 2.1. we describe how the TAM can be employed to explain and predict the acceptance of participative co-financing. Following Fig. 2, we continue with general characteristics of crowdfunding (Fig. 2, middle) in Sect. 2.2, followed by crowdfunding type-specific characteristics (Fig. 2, left) in Sect. 2.3. In Sect. 2.4, we approach regional banks (Fig. 2, right) and how they can benefit from the common interests with crowdfunding. According to the TAM, we introduce potentials reflecting perceived usefulness (Fig. 2, upper right) in Sect. 2.5. In Sect. 2.6, we continue with potentials reflecting perceived ease of use (Fig. 2, lower right). We conclude this chapter with the effect of the external variable experience on the intention to offer participative co-financing in Sect. 2.7.

2.1 Adaptation of the technology acceptance model

Davis (1986) initially developed the TAM intending to explain the determinants of computer acceptance of end-users on a theoretically sound and yet parsimonious basis. In subsequent studies, the TAM has been used to investigate any kind of information system in general. The primary objective is to trace the effects of internal beliefs and external variables on descendant behavioral intentions (Davis et al. 1989). Davis et al. (1989) derive the dependent variable behavioral intention from the theory of reasoned action (Ajzen and Fishbein 1980; Hill et al. 1977). Accordingly, the users' behavior is a succession of their intentions to perform the behavior.

Internal beliefs are expressed through perceived usefulness and perceived ease of use, where the latter is mediated by the first (Davis et al. 1989). Davis (1989: 320) defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance." He defines perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989: 320). However, perceived ease of use often only affects behavioral intentions through perceived usefulness. Several literature reviews observe that perceived usefulness has a much stronger effect than perceived ease of use (Davis 1989; Legris et al. 2003). Therefore, "[i]f one could measure only one independent variable, perceived usefulness would clearly be the one to choose" (King and He 2006: 746).

The TAM constitutes that external variables affect perceived usefulness and perceived ease of use (Legris et al. 2003). One of the TAM's strengths is that external variables are a fixed component of the model, enabling flexibility and

adjustability by opening up for features and capabilities specific to a particular system (Marangunić and Granić 2015). Among the most frequently considered external variables is the moderating effect of experience (King and He 2006; Legris et al. 2003; Venkatesh 2000).

Considering the novelty of participative co-financing, we must adjust the setting of the TAM to fit the context of our study better. Participative co-financing has not yet been used often enough to provide empirically reliable data. However, behavioral intention has proven to be a reasonably good predictor of actual system use (Davis et al. 1989). Therefore, in the context of this study's goal, we employ the TAM to provide implications about the decision-makers' acceptance of participative co-financing.

Established variables that reflect internal beliefs about participative co-financing at a pre-integration stage do not exist yet. Therefore, we make the necessary adjustments to employ potentials that reflect internal beliefs and eventually help predict intentions to offer participative co-financing. Marangunić and Granić (2015) remark that the adjustments of the TAM to the systems' specific needs are common. At the time of this study, participative co-financing is only at a conceptual stage, and actual integrations into regional banks' business models have not yet taken place. Hence, approaching end-users as initially conceived in the TAM is impossible. The decision about the trial, integration, and offer of participative co-financing is a strategic decision. Consequently, instead of examining end-users, we can only examine the intention of decision-makers who account for the strategic decision to offer participative co-financing.

The TAM predicts behavioral intentions for already employed information systems based on internal beliefs and external variables. Withal, many variables of the TAM are unknown, and future research is needed to uncover them; after all, they depend on the context in which the model is employed (Davis 1989). In the context of participative co-financing, behavioral intentions to use or offer this financing technique might depend on the type of crowdfunding. In our case, internal beliefs that influence perceived usefulness and perceived ease of use are likely to differ from already acquainted systems. We claim that potential synergies are perceived as useful since they enhance the banks' business model by increasing the models' efficiency. Potential target groups are perceived as useful since they enhance the banks' performance by offering their business processes to new customers. For instance, decision-makers might perceive participative co-financing as useful since an integration enables the banks to enhance their established values by offering related products to crowdfunding investors, by signaling openness to innovation, and by addressing a broader range of customers. The regional banks' natural background in financing might enable them to utilize potential synergies with minimum effort. Thus, some potential synergies might add to perceived ease of use. For example, the banks' core know-how is in financing. Thus, decision-makers might perceive using participative co-financing as easy (Davis 1989). In contrast to the TAM in its genuine form, we investigate variables of belief before the actual use to better understand how to improve the acceptance of participative co-financing in an early phase.

While the concept of participative co-financing is new, crowdfunding has been a prominent phenomenon since the late 2000s (Mollick 2014). Some banks have already gathered first experiences with crowdfunding. The TAM offers an established model to consider experiences as an external variable to examine the influence on behavioral intention (e.g., Legris et al. 2003).

Finally, participative co-financing is a digital technique indeed, but it goes beyond simple software automation. Thereby, it surpasses the original purpose of the TAM. Legris et al. (2003) demand employing the TAM in a business process application context to advance the model. We stress the character of participative co-financing being a business process information system by pointing out that multiple vendors offer white-label crowdfunding software already (e.g., portagon GmbH 2022). These software solutions enable efficient testing and integration of crowdfunding techniques into the banks' business processes.

2.2 Characteristics of crowdfunding

The key characteristics of crowdfunding are general characteristics (Fig. 2, middle), which we use to compare crowdfunding with regional banking. The primary function of crowdfunding is *financing* ("*for-finance*") by pooling financial resources from a group of voluntarily participating investors (Schwienbacher and Larralde 2010). The exact financing process depends on the platform's crowdfunding type and operative integration, such as the all-or-nothing principle (Mollick 2014). We summarize the resulting specifications on the type level in the next section.

Crowdfunding is *purpose-specific* (Böckel et al. 2021). By being purpose-specific, crowdfunding allows investors to participate in a dedicated cause that is valuable from the investors' perspective. Henceforth, we refer to those who initiate a campaign as entrepreneurs (e.g., Mollick 2014). Entrepreneurs are trusted to use the capital raised only for the sole purpose presented in the campaign (Agrawal et al. 2014). After all, the purpose is the motive for why investors decide to give their money. The misuse of capital leads to the corruption of trust in the effectiveness of crowdfunding. Mollick (2014) and Cumming et al. (2020) investigate the frequency of fraudulent crowdfunding campaigns and find that fraud rarely happens and often cannot be distinguished from entrepreneurs who struggle to meet their obligations. However, effectiveness and trustworthiness are of existential importance for reputable entrepreneurs and platform operators (Cai et al. 2021; Chen et al. 2014).

Crowdfunding is *participative* since, on crowdfunding platforms, the crowd receives the opportunity to participate. Most crowdfunding platforms' stated goal is to give as many people as possible the opportunity to participate (Schwienbacher and Larralde 2010). Restrictions and constraints usually depend on the crowdfunding type, the platforms' way of conduct, or legal obligations. Platforms also enable communication about a campaign (Cai et al. 2021; Liang et al. 2020). The entrepreneurs of a campaign communicate their ideas, goals, conditions, and requirements. The crowd has the opportunity to ask questions, make comments, and exchange thoughts with each other (Bretschneider and Leimeister 2017). Research shows that the success of campaigns depends significantly on how well entrepreneurs and the

crowd communicate (e.g., Allison et al. 2015; Block et al. 2018; Kim et al. 2016; Lee et al. 2019; Pietraszkiewicz et al. 2017; Thies et al. 2016). Participation is possible due to communication and the free choice of how much someone wants to contribute.

Crowdfunding is *digital* (Belleflamme et al. 2014). Since crowdfunding is a phenomenon of the internet, it is possible to participate in a campaign regardless of the time and location, as digital crowdfunding compensates for geographical limitations (Kang et al. 2017). This characteristic holds the potential for entrepreneurs to achieve a great outreach to possible investors. Therefore, entrepreneurs can reach investors from regions that, without digital technologies, could not be reached and convince them to participate.

The digital foundation of crowdfunding also emphasizes the compelling impression that it is an innovative technique (Jovanović 2019; Walthoff-Borm et al. 2018). Advanced customer-centricity, which digitization and crowdfunding enable, allows for an innovative and market-oriented approach between participating entrepreneurs and investors. The market orientation of crowdfunding (Chan et al. 2019), in turn, is perfect for testing product legitimacy. Additionally, the campaigns themselves reinforce the impression that crowdfunding is innovative. Often the products presented in crowdfunding campaigns are highly innovative, and their legitimacy has yet to be proven (Kim et al. 2016). Eventually, digitization, emphasized through crowdfunding, promotes an innovative and market-oriented approach.

Crowdfunding is *market-oriented,* which is expressed in the possibility that campaigns are usable as a marketing tool to promote the campaign's purpose (Xu et al. 2018). This purpose can be a product, service, action, or initiative (Messeni Petruzzelli et al. 2019). In this way, crowdfunding attracts attention and, if well designed, creates interest and the desire to participate. Furthermore, crowdfunding serves as a laboratory to test the acceptance of innovative concepts (e.g., Lam and Law 2016; Laurell et al. 2019; Vismara 2019). After publishing an idea on a platform, the market (the crowd) can analyze and evaluate the product. In doing so, it is possible to determine the balance between supply and demand, which is particularly beneficial for innovative products where demand is difficult to predict (Xu et al. 2018). The more value investors assign to an idea, the higher the support a campaign receives.

2.3 Characteristics of financial-return crowdfunding types

Currently, two classes of participative financing with a total of four crowdfunding types can be distinguished (Fig. 2, left) (De Buysere et al. 2012; Kirby and Worner 2014). First, non-financial-return crowdfunding offers a material or sentimental value to investors in return for their financial support (De Buysere et al. 2012; Lam and Law 2016; Messeni Petruzzelli et al. 2019). This class can be divided further into reward- (1) and donation-based (2) crowdfunding. Second, financial-return crowdfunding offers a monetary return or company shares to investors in return for their investment (Kirby and Worner 2014; Lam and Law 2016). This class can be divided into lending- (3) and equity-based (4) crowdfunding, also referred to as crowdlending and crowdinvesting (De Buysere et al.

2012; Kirby and Worner 2014). Belleflamme et al. (2015) summarize the main characteristics of the different types: In reward-based crowdfunding, investors are often early adopters or prosumers interested in acquiring a product or service as early as possible. In donation-based crowdfunding, investors mainly invest to support a non-profit or humanitarian cause for voluntary, community-oriented, and altruistic reasons. In lending-based crowdfunding, investors grant a credit to a private individual or organization to receive interest for their support. In equity-based crowdfunding, investors become shareholders through their investment and thus participate in the value creation of their investment. The five key characteristics apply to all four types. The specifications of the types' characteristics are relatively similar within one class but differ between the two classes. Although we only consider financial-return crowdfunding as this class is most comparable with established bank financing, knowledge about non-financial-return crowdfunding is necessary for reasons of better differentiability.

The key characteristic *for-financing* holds many specifications based on which the classes and types can be distinguished, such as volume (1), return (2), risk (3), and regulations (4) (Beaulieu et al. 2015; Cicchiello et al. 2020; Jovanović 2019; Shneor et al. 2020). Research shows that the investment volume (1) is generally higher in financial-return crowdfunding (Shneor et al. 2020). In financial-return crowdfunding, a mandatory minimum investment is typical (Messeni Petruzzelli et al. 2019). Also, the purposes for which entrepreneurs seek capital in financial-return crowdfunding often require higher investments than non-financial-return crowdfunding (Belleflamme et al. 2014).

Obviously, the type of return (2) represents one of the most evident differences. While for financial-return crowdfunding, the return can either be a monetary interest or the share of an asset. For non-financial-return crowdfunding, the return can be materialistic or idealistic (De Buysere et al. 2012; Kirby and Worner 2014).

The investors' individual risk (3) increases with the amount of their investment. The risk involved in financial-return crowdfunding is considerably higher than for non-financial-return crowdfunding (Beaulieu et al. 2015). However, many financial-return crowdfunding platforms have established assessment processes to evaluate the quality of campaigns ahead of time to mitigate the risk of losing investments (e.g., Companisto 2021b). Additional risk arises for investors who are unsophisticated (Allison et al. 2017). Also, entrepreneurs who utilize financial-return crowdfunding might be more sophisticated than entrepreneurs who use non-financial-return crowdfunding. The entrepreneurs' sophistication, experience, and education also significantly impact the risk of an investment.

In recent years, lawmakers have developed regulations (4) to protect investors and increase the credibility of crowdfunding. In Germany, financial-return crowdfunding campaigns must publish an asset information sheet (German: Vermögensanlage Informationsblatt) (§ 13 Abs. 1 VermAnlG 2012). This regulation obliges entrepreneurs to disclose certain information in a mandatory format. Regulations in financial-return crowdfunding provide security but also lead to increasing complexity. In addition, the design of the regulations is subject to national legislation. The market of non-financial-return crowdfunding is relatively deregulated and is governed mainly by the civil code (German: Bürgerliches Gesetzbuch) (Rockel et al. 2020).

Crowdfunding campaigns serve a *specific purpose*. While both classes can serve profit-oriented and non-profit purposes, roughly, in financial-return crowdfunding, the purpose is mainly profit-oriented (Beaulieu et al. 2015). In contrast, although non-financial-return crowdfunding often serves a commercial purpose, it likely has a non-profit purpose or common welfare as an objective (Jovanović 2019). The purpose depends on the target group since a campaign, for example, in a startup context serves a different purpose than a campaign for a cultural initiative. It is relevant for banks to determine which target groups they want to address by offering participative co-financing.

To enable *participation*, crowdfunding platform operators developed various methods which allow entrepreneurs and investors to communicate. A common practice for all types is a comment- or question-and-answer-section on the campaign website (Bretschneider and Leimeister 2017; Cai et al. 2021; Liang et al. 2020). While providing an informative video is good practice for all types (Mollick 2014), a trend towards live video webinars is observable on financial-return crowdfunding platforms (e.g., bettervest 2021; Companisto 2021a). Such videos increase trust and allow viewers to engage in a conversation with entrepreneurs and fellow investors. Platforms can increase the level of participation even further through active communication.

The more sophisticated a campaign becomes, the more sophisticated investors need to be. Likely, investors who participate in financial-return crowdfunding have more profound knowledge about the assessment of ventures and the risks involved than investors who invest in non-financial-return crowdfunding.

In terms of the *digital* key characteristic, classes and types do not differ significantly. All types have in common that they are *market-oriented* since they need to legitimize their campaign and prove that customer demand exists (Chan et al. 2019; Kim et al. 2016). Especially non-financial-return crowdfunding is customer-centric since digital communication helps to integrate customer feedback easily (Gomber et al. 2017). Also, in non-financial-return crowdfunding, investors often are customers as well. This aspect is even more critical for financial-return crowdfunding since their financial specifications require more sophistication than established products.

Crowdfunding types differ in terms of market orientation by the number of parallel campaigns and co-existing platforms, resulting in competition (Belleflamme et al. 2015; Dushnitsky et al. 2016). Competition is much higher in non-financial-return crowdfunding due to more simultaneously running campaigns. To stand out from the competition, campaign creators must be more market-oriented than their competition. This competitive advantage is achievable through a superior marketing strategy or a product with a superior value-add.

2.4 Characteristics of regional banks that intersect with crowdfunding

Regional banks have common interests with crowdfunding, which is the prerequisite for identifying intersections of both systems. Over the past centuries, regional banks have developed a comprehensive portfolio of products and services, exceeding crowdfunding (Deutscher Sparkassen- und Giroverband 2019). We identify commonalities by

analyzing regional banks based on the five key characteristics of crowdfunding (Fig. 2, right).

In terms of the *for-finance* characteristic, the banks' core business is the management of savings accounts with low interest rates as well as credit-based financing (Deutscher Sparkassen- und Giroverband 2019). Therefore, regional banks have great experience in assessing creditworthiness (Deutscher Sparkassen- und Giroverband 2019). Their experience with implementing the Third Basel Accord, which was a reaction to the 2008 financial crisis, contributes to their expertise (Jovanović 2019). The Third Basel Accord affects banks in multiple ways, for example, how banks manage the risks of their assets, the equity ratio they need to obtain for granting credits, and transparency requirements (Domikowsky et al. 2012).

Regional banks support their region and community by providing *purpose-specific* credits for private customers and credits to regional companies as well as public institutions (Deutscher Sparkassen- und Giroverband 2019). Therefore, regional banks are essential for communal economies (Flögel and Gärtner 2018). Many regional banks enjoy the image of supporting purposes that are long-lasting, trustworthy, and valuable to the community (Deutscher Sparkassen- und Giroverband 2019).

In terms of *participation*, regional banks do typically not offer products that allow participation explicitly. Financial products issued by regional banks with a participative character are profit participation rights. These participation rights are often only temporary and limited to one project (Peter et al. 2012). However, regional banks have a strong connection to their community (Flögel and Gärtner 2018). Before digitization made physical automated teller machines (ATM) obsolete and electronic payment services became popular (Gomber et al. 2017), a close net of the banks' decentralized subsidiaries provided cash money and financial services to whole communities (Flögel and Gärtner 2018). Often generations of families were customers of the same bank, which supported the families in smaller and larger purchases. Although banks have not yet enabled participation in a democratic sense, they have contributed significantly to the development of their communities, facilitating their customers to participate in their region's economy.

Digitization presents an immense challenge, especially for smaller banks. Due to digitization, geographic constraints erode, causing decentralized regional banks to lose their communal connection (Giebe and Schulz 2021). Furthermore, in contrast to the many glamorous fintech startups, regional banks often seem stubborn and slow to adapt to innovations. These developments put regional banks under pressure to innovate their business models and offer new digital services.

Regional banks are highly *market-oriented* (Flögel and Gärtner 2018). They have a significant advantage due to their network of subsidiaries with competent bank advisors who know their customers. Banks can observe the mood of regional markets through their advisors and reach out to customers to identify demands.

2.5 Perceived usefulness of participative co-financing

Potentials emanate at the intersection of crowdfunding and regional banks (Fig. 2, upper right). By integrating participative co-financing into the banks' business

model, these potentials can "enhance [the banks'] performance" (Davis 1989: 320), improve the product portfolio, and boost the perception of the banks' customers (Davis 1989). Banks can take advantage of these potentials if decision-makers perceive them as useful. We distinguish between potential synergies (2.5.1) and potential target groups (2.5.2). Potential synergies emanate at the intersection of the crowdfunding information system and the established information system of regional banks. Decision-makers might perceive participative co-financing as useful. Integrating participative co-financing in the banks' value creation might enhance their performance, enable them to offer related products to the social network of the crowd, or signal openness for innovation. Offering participative co-financing might also be perceived as useful since it enhances the banks' capability to finance target groups that banks cannot address with established financing techniques.

2.5.1 Potential synergies of participative co-financing

Regional banks can use participative co-financing for *cross-selling* (Kamakura 2008). Such sales can be directly or indirectly linked to a campaign. The core idea of co-financing is that a specific purpose is financed partially by the crowd and partially by the bank. Indirectly, cross-selling is possible if the bank stays connected with the entrepreneurs and provides financing for future ventures. In addition, the high reach of a crowdfunding campaign offers the opportunity to connect with potential customers who might become interested in the bank's products (Amit and Zott 2001; Rockel et al. 2020). In this respect, the synergetic potentials of participative co-financing are applicable for marketing purposes and thus generate additional sales (Xu et al. 2018). Conclusively, the decision-makers' intention to offer participative co-financing could be affected by the potential to realize cross-selling.

On crowdfunding platforms exists a strong sense of community, which regional banks can enhance to strengthen customer relationships that digitization otherwise diminishes. Participative co-financing makes it possible to finance initiatives in the own region together. Especially cultural initiatives that are not primarily commercially oriented could benefit from collaborative financing. By pooling their resources, the banks and the crowd can achieve a higher financing volume and share the risk. In advance of a community's project, the demand for the initiative is confirmed through crowdfunding before the bank supports the purpose with debt (Agrawal et al. 2014).

Furthermore, the banks' funding could be conditional. Two ways of conditional co-financing are possible (Rockel et al. 2020): (1) *Simple conditional co-financing* refers to the bank's credit financing depending on a crowdfunding campaign's success. The credit is granted only if a crowdfunding campaign achieves a predefined funding goal within time. This way is beneficial for banks to test the acceptance of the purpose for which financing is acquired. (2) *Leveraged co-financing* refers to an already granted credit that is leveraged with a certain amount if a crowdfunding campaign succeeds. In this case, crowdfunding initiators can signal crowdfunding investors that they are considered trustworthy by banks and increase their chances of a successful campaign. A third alternative is unconditional co-financing (Rockel et al. 2020): (3) *Blanco co-financing* refers to an approach where the bank credit is

granted independent from the crowdfunding result. In this case, crowdfunding primarily has a marketing function. It supports the goal for which financing is acquired, such as introducing an innovative product. The synergetic potential to *foster the community* and to counteract the loss of customer loyalty could affect the decision-makers' intention to offer participative co-financing.

Another potential for banks could lie in the effect of participative co-financing being perceived as an innovative financing technique (Jovanović 2019). However, regional banks rather have the image of being keepers than innovators. Despite continuity being obstructive in times of change, for years, the regional banks' business model was built on inalterability, enhancing their customers' trust. Additionally, most regional banks operate as public legal entities under communal sponsorship. Regional savings banks use their profits exclusively to consolidate their equity or finance their region's development (Deutscher Sparkassen- und Giroverband 2019). Therefore, the banks' need to change is limited per se, as long as established ways of conduct function. However, due to the increase in competition caused by internet banking, banks need to change. To renew their image, regional banks can use crowdfunding. By offering participative co-financing, they can present themselves as innovative. The potential for banks to be *perceived as innovative* could affect the decision-makers' intention to offer participative co-financing.

All potentials draw on at least one of the five key characteristics of crowdfunding. Also, the potentials emphasize that financial-return crowdfunding fits regional banks' business model better than non-financial-return since financial-return crowdfunding is closer to the regional banks' business model.

2.5.2 Potential target groups of participative co-financing

In the context of participative co-financing, target groups for which either crowdfunding or bank financing is attractive come into question (Fig. 2, bottom). Obviously, the transitions are fluent, and there are target groups for which established and novel financing techniques are attractive. By combining both financing techniques, target groups could benefit from the combined advantages of both techniques. While bank financing might be more suitable for large investments with predictable demand, crowdfunding can help to predict demand and provide small initial investments (Xu et al. 2018). A combined approach helps to bridge the gap between both techniques (De Buysere et al. 2012), enabling an optimal mix for existing and new target groups.

For *startups*, traditional bank financing is unconventional due to the high credit requirements. On the other hand, crowdfunding has been established as a popular technique to finance startups (e.g., De Buysere et al. 2012; Paschen 2017). For startups, there are various advantages to crowdfunding. Depending on the chosen crowdfunding type, startups receive funding without giving up shares and without being bound by requirements from investors (Beaulieu et al. 2015). In this sense, crowdfunding is particularly suitable for young companies in the seed phase (Mollick 2014). The high degree of market orientation also allows startups to market their product, build a reputation, and thus provide a proof of concept. Banks could offer

participative co-financing to provide a financing technique for startups that are usually not suitable for traditional bank financing.

Crowdfunding is an attractive financing technique for *cultural and non-profit initiatives* (Allison et al. 2015; Moon and Hwang 2018). Culture thrives on community. For cultural initiatives, the focus is not only on financing the project but also on the idea of community. Regional banks traditionally have deep ties to their community. Regional banks also often support cultural initiatives. Besides cultural initiatives, social initiatives are financeable with participative co-financing (Allison et al. 2015). This opportunity could allow realizing social projects which would not receive sufficient funding by traditional means. By offering participative co-financing, banks could strengthen their regional value creation and offer cultural initiatives the possibility of an innovative financing option that unites the communities with the banks.

Small and medium-sized companies are typical customers of banks (Deloof et al. 2019). Although examples of some SMEs using crowdfunding exist, empirical data on this form of financing are scarce (Eldridge et al. 2021). Nevertheless, hybrid financing in the form of participative co-financing offers various advantages. SMEs can involve their employees and people from the region in investments by utilizing participative co-financing. At the same time, companies only must acquire a smaller amount of debt capital since the other portion of the financing is provided by the crowd. In this way, the effect on the companies' debt ratio is lower. Banks could offer participative co-financing to small and medium-sized enterprises as an innovative financing technique. This technique combines the advantages of novel crowdfunding and traditional credit financing.

Supporting the projects of *individuals* is an established business of regional banks, for example, by offering consumer credits (Deutscher Sparkassen- und Giroverband 2019). In the past years, peer-to-peer financing via the internet has developed as a novel form of financing for individual persons. This financing technique is very similar to traditional bank financing (Kupp and Anderson 2007; Larrimore et al. 2011). Peer-to-peer financing is a form of crowdfunding in which individual persons present their projects on a dedicated internet platform to receive capital from a group of people (Larrimore et al. 2011). The financing is usually in the form of a credit with a fixed interest rate (Kirby and Worner 2014). However, platforms that offer such financing are discredited as being used by capital seekers who have no access to traditional bank financing (Kirby and Worner 2014). Through participative co-financing, banks can create a product offer for those who would only receive a too small financing volume through a traditional credit. Socially needy people, in particular, could benefit from this form of financing, as the social character of crowdfunding is particularly well suited to financing social causes (Allison et al. 2015). Additionally, banks would join in the peer-to-peer financing market and enable investors to invest on trustworthy platforms. Banks could offer participative co-financing and thus provide individual persons with a technique of financing their projects for which traditional bank financing is not suitable.

In conclusion of Sects. 2.5.1 and 2.5.2, potential synergies and potential target groups reflect perceived usefulness. Potential synergies may increase the acceptance of participative co-financing since they enhance the banks' performance, enable new product offers, or signal innovativeness. The acceptance of participative

co-financing may also increase due to perceived usefulness resulting from the opportunity to address new target groups or make an advanced product offer to existing target groups. Following the theoretical construct of the TAM, we propose the following hypothesis.

Hypothesis 1 Perceived usefulness, reflected by potential synergies and potential target groups, has a positive effect on the decision-makers' intention to offer participative co-financing.

2.6 Perceived ease of use of participative co-financing

While some potentials are creatable by integrating participative co-financing, other potential synergies come as a byproduct. The latter may be perceived as easing the use of participative co-financing since these potentials are "free of effort" (Davis 1989: 320). Banks can make already *existing know-how* available for participative co-financing with almost no effort (Fig. 2, lower right). Therefore, decision-makers may perceive that existing know-how eases the use of participative co-financing.

Participative co-financing enables banks to use existing know-how and complement existing know-how. First, one possibility is to transfer know-how about the design of credits to the design of crowdfunding campaigns. This aspect is especially true for financial-return crowdfunding campaigns. Second, banks are experienced and trained in providing trustworthy financial advice. The banks' know-how consists of financial expertise and knowledge about customer needs. Banks can enhance and expand their advisory expertise by adapting their know-how to participative co-financing. This adaptation benefits their financial investment consulting. Third, in line with the increased requirements for credit- and risk-management due to regulations, participative co-financing offers several opportunities to enhance and expand their risk-management expertise (Ahn and Le 2015; Chiorazzo et al. 2018; Diener and Špaček 2021). Capital acquired by using participative co-financing can be used to test the economic viability of a risky venture before granting high amounts of money. Before giving a credit, conducting a crowdfunding campaign helps to assess the market fit. A combined approach could improve the banks' risk assessment (Xu et al. 2018). Additionally, participative co-financing makes it possible to finance risky projects that would not receive a credit under normal circumstances by sharing the risk between the bank and the crowd (Salzmann 2013). Providing one portion of financing through the crowd reduces the need for debt capital from banks. The lower credit volume reduces the requirements that need to be met and lowers the equity capital contribution to be made by banks. The potential that results from the synergetic use of existing know-how and the possibility of reducing uncertainties can affect the decision-makers' intention to offer participative co-financing.

While "perceived ease of use" could be influenced by other potentials, the effect of this latent variable remains unclear. As several researchers note, the effect of perceived ease of use is regularly much smaller compared to perceived usefulness (e.g., Davis 1989; King and He 2006; Legris et al. 2003). In particular, since participative co-financing is so novel, there may be much ambiguity

about potentials that arise as a byproduct and are useable effortlessly. Nevertheless, in line with the theoretical construct of the TAM, we propose that perceived ease of use increases the decision-makers' acceptance of participative co-financing (Davis 1989). Furthermore, perceived usefulness mediates the effect of perceived ease of use on the acceptance of participative co-financing (Davis 1989). We claim the following hypotheses.

Hypotheses 2a Perceived ease of use, reflected by the potential synergy of already existing know-how, has a positive effect on the decision-makers' intention to offer participative co-financing.

Hypotheses 2b The effect of perceived ease of use on the decision-makers' intention to offer participative co-financing is positively mediated by the effect of perceived usefulness.

2.7 Experience as external variable

External variables provide a better understanding of internal beliefs and allow determining variables that improve the acceptance of participative co-financing (Legris et al. 2003). In the context of research evolving around the TAM, the effect of the external variable experience has been investigated frequently. For example, Burton-Jones and Hubona (2006) find a strong effect of system experience on usage.

It is assumable that decision-makers whose banks already employed crowdfunding in a business-related context are likely to assess participative co-financing differently than their inexperienced counterparts (Pennings and Harianto 1992). Experienced decision-makers will already have spent their first thoughts on potential applications of combined financing through crowdfunding and traditional banking. Their experiences may also help to settle initial preconceptions about crowdfunding. Experience with crowdfunding helps decision-makers to better asses how participative co-financing can enhance the banks' performance and how much effort is needed to implement participative co-financing. We claim that experiences reduce preconceptions and facilitate the anticipation of potential synergies. Therefore, experience positively affects perceived usefulness and perceived ease of use. We propose the following hypotheses.

Hypotheses 3a Experience has a positive moderating effect on the relation between perceived usefulness and the decision-makers' intention to offer participative co-financing.

Hypotheses 3b Experience has a positive moderating effect on the relation between perceived ease of use and the decision-makers' intention to offer participative co-financing.

3 Data and variable

Our objective is to explore how potential synergies might affect the banks' acceptance of participative co-financing. We opt for a survey-based research for three reasons: First, in research investigating the acceptance of technology, surveys are a commonly used method (e.g., Ahmad 2018; Burton-Jones and Hubona 2006; Davis 1986). Second, survey-based research allows for a quantitative analysis including a large set of observations. Thereby, survey research is relatively objective. Third, we aim to introduce the concept of participative co-financing to the literature. To this end, a survey may help to gain general details about the banks' interests and expectations, which is a prerequisite for subsequent in-depth investigations.

In advance of this study, we consulted academic literature, gained insights from practitioners, and researchers from the relevant fields. During this process, the Fraunhofer Center for International Management and Knowledge Economy contributed as an associated partner, bridging between academia and practice. As a result of this collaborative process, we designed the survey for this study. The survey was commissioned and distributed by the scientific department of a German association of savings banks among regional subsidiaries.

Germany provides a suitable test setting since Germany offers an optimal composition in terms of its national economy, crowdfunding market, and regional banking environment. Within Europe, Germany is the largest national economy (Eurostat 2022). Therefore, Germany has a high innovation potential which creates further investment opportunities. In this setting, crowdfunding may be a useful technique to finance innovation (Agrawal et al. 2014). Furthermore, compared to other European countries, the German crowdfunding market ranks third measured by the total volume invested (Ziegler et al. 2019). Thus, it is assumable that crowdfunding has achieved enough popularity to be surveyed. Finally, regional savings banks have a long tradition in Germany, resulting in a strong relationship between the banks and the stakeholders in their region (Flögel and Gärtner 2018).

The survey was addressed to decision-makers in the senior or product management who oversee decisions about products and pilot projects. We distributed 379 paper-based and equally many digital versions of the survey to all 379 headquarters of the regional banks that are members of the association. We attained a unique dataset with 108 observations from the regional and independent subsidiaries across Germany. This corresponds to a response rate of 28 percent.

As theorized by the TAM, perceived usefulness and perceived ease of use affect the intention to offer participative co-financing (Davis 1989). In the TAM, reflective constructs measure latent internal beliefs (Freeze and Raschke 2007). We adapt the TAM to explore potentials that reflect perceived usefulness and predict the acceptance of participative co-financing. Additionally, we measure the effect of each variable on the intention to offer participative co-financing separately. We clarify our research framework in Fig. 3. As dependent variables, we operationalize the intention to use either of the two financial-return crowdfunding types in a co-financing context (3.1). To derive our independent variables, in the

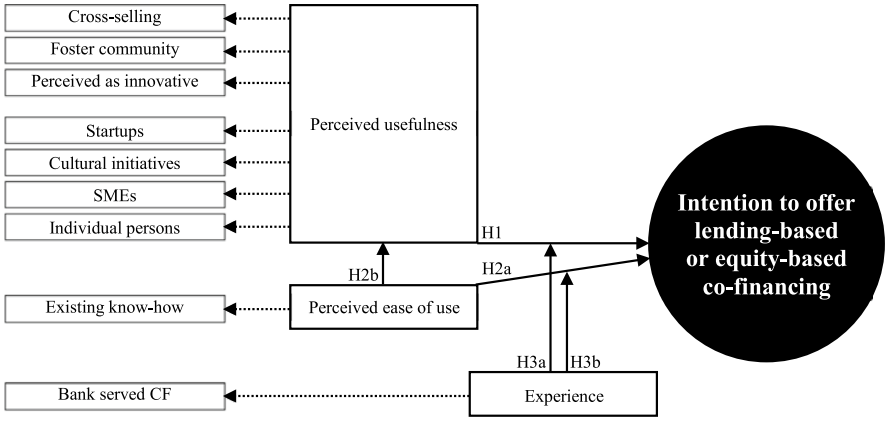


Fig. 3 Multivariate regression models according to our research framework (own figure)

survey, we covered potential synergies, potential target groups, questions regarding the decision-makers' prior experiences, and demographic information (3.2 to 3.4).

3.1 Dependent variables of intention

We aim to explore which type of financial-return crowdfunding regional banks prefer in a participative co-financing context. To this end, we operationalize the decision-makers' intention to offer that particular type of crowdfunding in a co-financing context for each of the two types of financial-return crowdfunding. To derive our dependent variable, we asked: *What is your intention about how reasonable it is for [your bank] to offer a co-financing model consisting of lending-based crowdfunding and established credit financing?* We repeat the question for *equity-based* crowdfunding. The decision-makers' intentions are measured utilizing a five-point Likert scale. The variables we obtain represent our dependent variables: *Lending-based co-financing* and *Equity-based co-financing*. They express the decision-makers' intention to use either one of the two types of financial-return crowdfunding in combination with established bank financing.

3.2 Independent variables of perceived usefulness

We measure perceived usefulness based on three potential synergies and four potential target groups, according to the potentials identified in 2.5.1 and 2.5.2. We operationalize these potentials as variables that reflect perceived usefulness. Accordingly, potential synergies which reflect perceived usefulness are the possibility to use participative co-financing for (1) cross-selling, to (2) foster the local community, or to

(3) be perceived as innovative. Regardless of the type of crowdfunding used, we ask: *How strongly do you agree with the following aspects about offering crowdfunding types for your [bank]?* We measured the decision-makers' answers on a five-point Likert scale. This assessment results in the three reflective variables *cross-selling*, *foster community*, and *perceived innovative*.

We identify four target groups: (1) startups, (2) cultural initiatives, (3) small and medium-sized companies, and (4) individual persons. We measure the possibility of addressing potential target groups as variables reflecting the perceived usefulness of participative co-financing. We ask: *How suitable do you consider financing one of the following target groups with a co-financing model of crowdfunding and credit financing offered by the [bank]?* We provide decision-makers with five-point Likert scales to rate the suitability of each potential target group, regardless of the crowdfunding type. We represent each target group (*TG*) by an accordingly named reflective variable: *TG startups*, *TG SMEs*, *TG individuals*, and *TG cultural initiatives*.

We construct our scaled independent variable of *perceived usefulness* based on these seven variable*s*. To determine the scale reliability, we calculate Cronbach's Alpha. We receive a value of $\alpha = 0.804$, representing good reliability of our construct (Nunnally et al. 1994).

3.2.1 Independent variable of perceived ease of use

We measure perceived ease of use based on one potential synergy, according to 2.6. We operationalize existing know-how as an indicator for perceived ease of use. We ask decision-makers to rate the potential to use existing know-how based on a five-point Likert scale. We derive the variable by asking: *Can [crowdfunding] be implemented easily with existing know-how within the [bank]?* This assessment results in the reflective variable *existing know-how*. Since we measure *perceived ease of use* only based on *existing know-how,* we do not introduce an extra variable.

3.2.2 External variable of experience

We measure the external variable experience following Sect. 2.7. We operationalize the decision-makers' business-related experience. As we stated formerly, some banks have already served crowdfunding campaigns. Therefore, some decision-makers have already been involved in crowdfunding campaigns and have had the chance to gather first-hand experiences. We ask whether decision-makers already gathered business-related experiences with participative financing, neglecting the context and type: *[I]ndicate whether the following statements apply to [your bank]. At my [bank], we have already served a crowdfunding project.* We provided the possible answers "Yes", "Unsure", and "No". We capture these answers in the binary variable *bank served CF,* coded as one if the answer was "Yes" and zero otherwise. Since we measure experience only based on the variable *bank served CF*, we do not introduce an extra variable for *experience*.

Table 1 Descriptive statistics

	N	Mean	Median	Min	Max	Variance
Lending-based co-financing	108	3.176	3	1	5	1.324
Equity-based co-financing	108	3.056	3	1	5	1.492
TG individuals	108	1.806	1	1	5	1.074
TG startups	108	3.731	4	1	5	1.039
TG SMEs	108	2.741	3	1	5	1.035
TG cultural initiatives	108	3.704	4	1	5	1.332
Foster community	108	3.630	4	1	5	0.946
Perceived innovative	108	4.000	4	1	5	1.084
Cross-selling	108	3.333	3	1	5	1.421
Existing know-how	108	3.111	3	1	5	1.371
Bank served CF	108	0.093	0	0	1	0.085
Age	108	3.120	3	1	5	0.985
Gender	108	0.898	1	0	1	0.092
Leader	108	0.722	1	0	1	0.202

The variable age corresponds to the mean age between 41 and 50 years old

3.3 Control variables

Research shows that investors on crowdfunding platforms are 39 years old on average and male (Klöhn and Hornuf 2012). To consider general demographic information, we control for the informants' *Age* and *Gender*, where men are coded as one. Since some decision-makers passed on the survey to respective experts within their organization, we control for the informants being actual decision-makers in leadership positions. We, therefore, introduce the binary variable *Leader,* which is coded as one if informants report being leaders.

3.4 Statistical analysis

We display the results of our descriptive statistics and correlations matrix in Table 1 and Table 2. Figure 4 presents graphs that delineate the informants' business-related *experience* and demography. Figure 5 visualizes the intention to offer participative co-financing for each of the two types of financial-return crowdfunding. We conduct a twofold analysis by looking at the direct effects of potentials first and acceptance according to the TAM second. Thereby we look at lending-based and equity-based crowdfunding separately. Figure 3 adapts the original TAM and picks up on our research framework presented in Fig. 2. Thereby, Fig. 3 depicts the emanating potentials that reflect the respective constructs of the TAM and illustrates our statistical analysis.

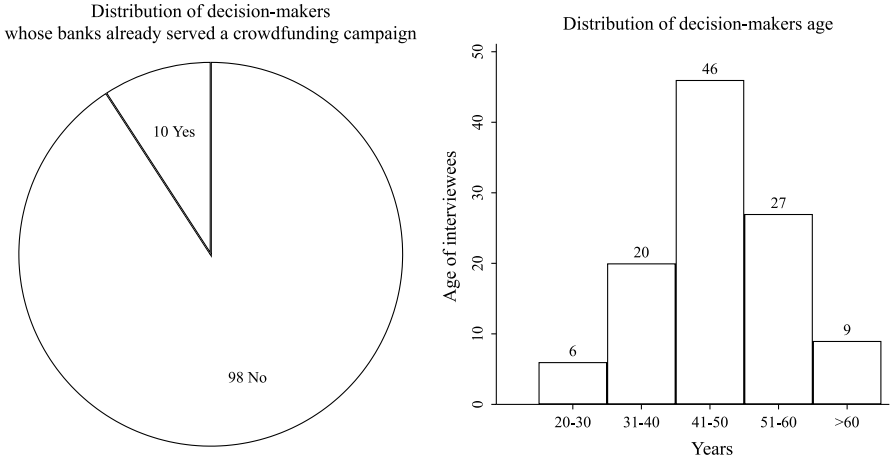
First, we analyze the direct effects of all variables by employing a robust OLS regression. We display these results in Table 3 (models D1 to D10). We propose five models per dependent variable, one with control variables only (D1, D6), one

Table 2 Correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	Lending-based co-fi	1.000													
(2)	Equity-based co-fi	0.565	1.000												
(3)	TG individuals	0.350	0.274	1.000											
(4)	TG startups	0.614	0.410	0.242	1.000										
(5)	TG SMEs	0.502	0.373	0.218	0.500	1.000									
(6)	TG cultural initiatives	0.300	0.197	0.287	0.337	0.244	1.000								
(7)	Foster community	0.435	0.301	0.299	0.380	0.223	0.543	1.000							
(8)	Perceived innovative	0.632	0.426	0.199	0.599	0.371	0.428	0.471	1.000						
(9)	Cross-selling	0.570	0.308	0.068	0.528	0.388	0.337	0.478	0.640	1.000					
(10)	Existing know-how	0.464	0.466	0.311	0.472	0.330	0.301	0.463	0.529	0.422	1.000				
(11)	Bank served CF	0.258	0.301	0.215	0.022	0.113	0.138	0.254	0.123	−0.036	0.189	1.000			
(12)	Age	−0.076	−0.036	−0.059	−0.069	−0.043	−0.042	−0.031	−0.009	0.061	0.109	−0.104	1.000		
(13)	Gender	−0.082	0.066	0.144	−0.059	−0.086	0.100	0.061	−0.148	−0.138	−0.073	0.108	0.103	1.000	
(14)	Leader	0.059	−0.023	−0.037	0.080	−0.077	0.164	0.104	0.080	0.017	0.130	−0.087	0.222	0.201	1.000

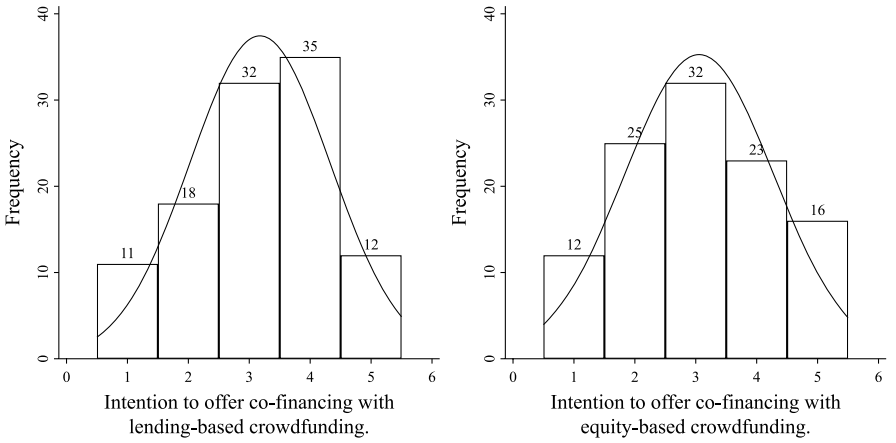
with potential synergies which reflect *perceived usefulness* (D2 and D7), one with potential target groups which reflect *perceived usefulness* (D3 and D8), one with *existing know-how* reflecting *perceived ease of use* (D4 and D9), and finally, one with the external variable of *experience* reflected by the variable *bank served CF* (D5 and D10). We recalculated the same models using an ordered logistic regression to test our results for robustness. We show the results of the robustness calculations in Table 6 in the Appendix. Also, we analyze the interaction of *experience* with all direct effects. We display only the significant interactions in Table 4 (models E1 to E6).

Second, we design statistical models according to the TAM (Table 5, models TAM1 to TAM10). Once more, we employ robust OLS regressions to test our models. To investigate the mediating effect between *perceived usefulness* and *perceived ease of use* according to hypothesis 2b, we create the models TAM1 and TAM2. In line with hypotheses 1 and 2a, we test the direct effect of both internal beliefs on the intention to offer either of the two crowdfunding types (TAM4 and TAM8). We also test the moderating effect of *experience* on the relation of *perceived usefulness* and *perceived ease of use* on the decision-makers' intention to offer participative co-financing according to hypotheses 3a and 3b (TAM5, TAM6, TAM9, and TAM10).



Left: The pie chart shows that of 108 informants, ten informants' banks already served a crowdfunding campaign. Right: The age of informants is distributed normally, with most informants being in the age cohort 41 to 50 years.

Fig. 4 Visualization of selected descriptive statistics (own figure)



The histograms show the intention of the decision-makers to offer lending-based (left) and equity-based (right) crowdfunding in a participative co-financing context. A visual inspection reveals that both distributions follow a normal distribution. However, compared to equity-based crowdfunding, lending-based crowdfunding is slightly skewed to the right and thus, receives more support for being offered in a participative co-financing model.

Fig. 5 Histograms of intentions to offer types of financial-return co-financing (own figure)

4 Results

In terms of the descriptive statistics, we find that the mean values are relatively close for our two dependent variables, with 3.176 for lending- and 3.056 for equity-based co-financing (Table 1). A t-tests reveals no significant difference within the class of financial-return crowdfunding ($| t | = 0.745$, $n = 214$). However, the correlation

Table 3 Models of potentials' direct effect based on OLS regressions

	Lending-based co-financing					Equity-based co-financing				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Perceived usefulness potential synergies										
Foster community		0.129					0.129			
		(0.106)					(0.127)			
Perceived innovative		0.455**					0.447**			
		(0.124)					(0.150)			
Cross-selling		0.252*					0.038			
		(0.107)					(0.108)			
Perceived usefulness potential target groups										
TG individuals			0.219*					0.172		
			(0.096)					(0.115)		
TG startups			0.478**					0.333**		
			(0.104)					(0.122)		
TG SMEs			0.266*					0.244		
			(0.116)					(0.131)		
TG cultural initiatives			0.039					0.011		
			(0.099)					(0.110)		
Perceived ease of use										
Existing know-how				0.463**					0.519**	
				(0.089)					(0.079)	
Experience										
Bank served CF					1.091**					1.241**
					(0.400)					(0.415)
Control variables										
Age	− 0.102	− 0.035	− 0.107	− 0.152	− 0.071	− 0.046	0.002	− 0.034	− 0.102	− 0.011
	(0.127)	(0.100)	(0.105)	(0.112)	(0.124)	(0.134)	(0.117)	(0.125)	(0.116)	(0.131)
Gender	− 0.350	− 0.301	0.045	− 0.156	− 0.493	0.304	0.346	0.568	0.521	0.142
	(0.353)	(0.272)	(0.311)	(0.391)	(0.359)	(0.334)	(0.383)	(0.360)	(0.320)	(0.342)
Leader	0.249	0.171	0.073	0.090	1.000	− 0.080	− 0.118	− 0.236	− 0.258	− 0.005
	(0.261)	(0.194)	(0.191)	(0.215)	(0.252)	(0.280)	(0.251)	(0.245)	(0.232)	(0.268)
Constant	3.629**	0.378	0.286	2.285**	3.512**	2.985**	0.560	0.434	1.478**	2.852**
	(0.488)	(0.486)	(0.505)	(0.534)	(0.492)	(0.498)	(0.586)	(0.664)	(0.486)	(0.503)
Observations	108	108	108	108	108	108	108	108	108	108
R-sq	0.020	0.472	0.464	0.234	0.094	0.007	0.238	0.217	0.245	0.092
adjusted-R-sq	− 0.008	0.435	0.433	0.204	0.059	− 0.022	0.185	0.171	0.216	0.056
p-Value	0.530	0.000	0.000	0.000	0.074	0.809	0.000	0.000	0.000	0.027

*$p < 0.05$, **$p < 0.01$. Standard errors are reported in parentheses. Models D1 to D5 show the results for OLS regressions with the intention to offer lending-based co-financing. Models D6 to D10 show the results for OLS regressions with the intention to offer equity-based co-financing

between both variables is only at a medium level of $\rho = 0.565$ (Table 2). Thus, we conclude that both crowdfunding types are perceived similarly and yet are differentiated by decision-makers.

Our results regarding the direct effects of the reflective variables conform to the decision-makers' intuition about lending- and equity-based co-financing (Table 3). The results reveal differences between the variables that significantly affect the intention to offer either of both types. Model D2 reports the effects of the different potential synergies on the intention to offer lending-based co-financing. Suppose the decision-makers' expectation to being *perceived as innovative* when offering participative co-financing goes up by one step on the Likert scale. In that case, their intention to offer lending-based co-financing is expected to increase by 0.455 on the Likert scale. For the potential of *cross-selling*, an increase of 0.252 is expected in the same manner. Both effects are significant in model D2. The potential to *foster the community* has no significant effect on the intention to offer lending-based co-financing. Regarding the intention to offer equity-based co-financing according to model D7, only the potential of being *perceived as innovative* is significant. In that case, one step on the Likert scale increases the intention to offer equity-based co-financing by 0.447 on the Likert scale. Neither the potential to *foster the community* nor *cross-selling* affects the intention to use equity-based co-financing significantly.

Models D3 and D8 report the effects of addressing potential target groups on the intention to offer lending- or equity-based co-financing. Suppose the decision-makers' expectations regarding the eligibility of individual persons as a target group for participative co-financing goes up by one step on the Likert scale. In that case, their intention to offer lending-based co-financing is expected to increase by 0.219 on the Likert scale. Also, Startups and SMEs significantly affect the intention to offer lending-based co-financing positively (*TG startups*: $b = 0.478$; *TG SMEs*: $b = 0.226$). However, cultural initiatives appear not to affect the intention towards lending-based co-financing significantly. Regarding the intention to offer equity-based co-financing according to model D8, decision-makers only consider startups as a potential target group ($b = 0.333$). Neither individuals, SMEs, nor cultural initiatives significantly affect the intention to offer equity-based co-financing.

Models D4 and D9 reveal the effect of *existing know-how* on the intention to offer either of the two types of crowdfunding in a co-financing context. While a one-step increase on the Likert scale increases the intention to offer lending-based co-financing by 0.463, the intention to offer equity-based co-financing increases by 0.519. Since we measure all variables in D4 and D9 with equal scales, we claim that the effect of *existing know-how* is greater on the intention to offer equity-based co-financing.

Lastly, the direct effect of *banks served CF* or *experience* respectively is measured in models D5 and D10. *Experience* has a significant positive effect on the intention to offer any type of financial-return crowdfunding (D5, lending-*based co-fi.*: $b = 1.091$; D10, *equity-based co-fi.*: $b = 1.241$).

For confirmatory reasons, we checked for robustness by deploying ordered logistic regressions on all models from Table 3 (see results in Table 6 in the Appendix). The test results remain constant and confirm all findings from the OLS regressions.

Table 4 Interactions of experience and variables of perceived usefulness based on OLS regressions

	Lending-based co-financing			Equity-based co-financing		
	E1	E2	E3	E6	E7	E8
Bank served CF	− 0,193	− 2,271	− 1,447	− 0,537	− 2,231	− 1.931*
	(0.649)	(1.451)	(0.763)	(0.926)	(1.771)	(0.931)
Perceived innovative	0.642**			0.448**		
	(0.080)			(0.105)		
Perceived innovative ×Bank served CF	0.320*			0.455*		
	(0.158)			(0.217)		
TG startups		0.218*			0,12	
		(0.107)			(0.114)	
TG startups ×Bank served CF		0.771*			0.810*	
		(0.316)			(0.378)	
TG cultural initiatives			0.629**			0.442**
			(0.088)			(0.120)
TG cultural initiatives ×Bank served CF			0.497**			0.665**
			(0.178)			(0.213)
Control variables						
Age, Gender, Leader	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0,911	2.735**	0,779	1,03	2.403**	0,924
	(0.516)	(0.566)	(0.580)	(0.562)	(0.618)	(0.706)
Observations	108	108	108	108	108	108
R-sq	0.452	0.198	0.450	0.273	0.153	0.279
adjusted-R-sq	0.420	0.150	0.417	0.229	0.102	0.236
p-Value	0.000	0.000	0.000	0.000	0.000	0.000

*$p < 0.05$, **$p < 0.01$. Standard errors are reported in parentheses. Models D1 to D5 show the results for OLS regressions with the intention to offer lending-based co-financing. Models D6 to D10 show the results for OLS regressions with the intention to offer equity-based co-financing

To better understand the effect of *experience,* we calculate interaction effects for *experience* with all potentials. We report our results in Table 4, only displaying interactions with significant effects. We find significant positive interactions between *experience* and the potential of being *perceived as innovative* for targeting the *TG startups* and *cultural initiatives*. These interaction effects are consistent for both types of crowdfunding. Thus, decision-makers whose banks already served a crowdfunding campaign are more likely to support participative co-financing for startups and cultural initiatives than those whose banks did not offer crowdfunding yet.

Moreover, these decision-makers also assign a greater value to the potential of being *perceived as innovative* through offering participative co-financing. However, *experience* seems to have no significant effect on the potential to *foster the community* and enable *cross-selling*. Also, *experience* has no significant effect on the intention to offer participative co-financing to individuals or cultural initiatives.

Table 5 OLS regressions of the TAM

	Perceived usefulness		Lending-based co-financing				Equity-based co-financing			
	TAM1	TAM2	TAM3	TAM4	TAM5	TAM6	TAM7	TAM8	TAM9	TAM10
Perceived usefulness										
Perceived usefulness				1.068**	1.060**			0.507**	0.689**	
				(0.130)	(0.093)			(0.176)	(0.157)	
Perceived ease of use										
Existing know-how		0.372**		0.065		0.406**		0.330**		0.456**
		(0.050)		(0.104)		(0.099)		(0.101)		(0.088)
Experience										
Bank served CF					− 0.384	− 0.028			− 1.597	0.059
					(1.144)	(1.725)			(1.215)	(1.642)
Perceived usefulness × Bank served CF					0.273				0.691*	
					(0.294)				(0.313)	
Perceived ease of use × Bank served CF						0.196				0.200
						(0.405)				(0.380)
Control variables										
Age	− 0.039	− 0.079	− 0.102	− 0.067	− 0.041	− 0.123	− 0.046	− 0.062	0.013	− 0.070
	(0.066)	(0.052)	(0.127)	(0.101)	(0.098)	(0.113)	(0.134)	(0.115)	(0.119)	(0.118)
Gender	− 0.097	0.059	− 0.350	− 0.219	− 0.325	− 0.270	0.304	0.491	0.254	0.391
	(0.208)	(0.195)	(0.353)	(0.267)	(0.268)	(0.387)	(0.334)	(0.339)	(0.359)	(0.323)
Leader	0.147	0.019	0.249	0.070	0.121	0.140	− 0.080	− 0.268	− 0.149	− 0.200
	(0.183)	(0.148)	(0.261)	(0.175)	(0.178)	(0.222)	(0.280)	(0.219)	(0.232)	(0.238)
Constant	3.381**	2.299**	3.629**	− 0.171	− 0.022	2.372**	2.985**	0.314	0.551	1.573**
	(0.252)	(0.282)	(0.488)	(0.450)	(0.454)	(0.535)	(0.498)	(0.590)	(0.631)	(0.484)
Observations	108	108	108	108	108	108	108	108	108	108
R-sq	0.010	0.362	0.020	0.520	0.541	0.266	0.007	0.302	0.298	0.282
adjusted-*R*-sq	− 0.019	0.338	− 0.008	0.496	0.514	0.222	− 0.022	0.268	0.256	0.239
p-Value	0.845	0.000	0.530	0.000	0.000	0.000	0.809	0.000	0.000	0.000

*$p < 0.05$, **$p < 0.01$. Standard errors are reported in parentheses. Models TAM1 to TAM5 show the results for OLS regressions with the intention to offer lending-based co-financing. Models TAM6 to TAM10 show the results for OLS regressions with the intention to offer equity-based co-financing

As we conduct a twofold analysis, our second part of the analysis aims at investigating the acceptance of participative co-financing according to the TAM. We present the results of our regression analysis of the TAM in Table 5. The TAM predicts a mediation between *perceived ease of use* and the intention to use the system through *perceived usefulness*. We simulate mediation according to Baron and Kenny (1986), who state three conditions that a simulation must achieve to confirm a mediating effect. We begin with the effect of *perceived ease of use* on *perceived usefulness*. According to model TAM2 (Table 5), we find a significant positive effect meeting the first condition of mediation.

Next, we look at the intention to offer lending- and equity-based co-financing separately and begin with lending-based co-financing. We already discovered a significantly positive effect of *perceived ease of use* (reflected by *existing know-how*) on the intention to offer lending-based co-financing in model D4 (Table 3). Thereby, we meet the second condition of a mediation model (Baron and Kenny 1986) and find support for hypothesis 2a. The third condition states that *perceived usefulness* must affect the intention to offer lending-based co-financing. Furthermore, *perceived ease of use* must have a smaller effect in a combined model. Model TAM4 confirms a significant effect of *perceived usefulness* on the decision-makers' intention. According to model TAM4, we find support for hypothesis 1. Furthermore, model TAM4 shows that *perceived ease of use* has no significant effect anymore, thereby meeting the third condition and thus, providing support for hypothesis 2b. In models TAM5 and TAM6, we investigate the effect of *experience* on *perceived usefulness* and *perceived ease of use*. However, we find no significant relation in any of the two models. Therefore, we find no support for hypotheses 3a and 3b. After all, regarding the acceptance of lending-based co-financing, *perceived usefulness* mediates *existing know-how* (supporting hypothesis 2b). Moreover, *perceived usefulness* positively affects the acceptance of offer lending-based co-financing (supporting hypothesis 1). Finally, perceived ease of use positively affects the acceptance to offer lending-based co-financing (according to D4 in Table 3, supporting hypothesis 2a).

Finally, we look at the intention to offer equity-based co-financing. In model D9 (Table 3), we already revealed a significant positive effect of *perceived ease of use* (again reflected by *existing know-how*) on the intention to offer equity-based co-financing, meeting the second condition of mediation models. Further, this finding provides support for hypothesis 2a. Model TAM8 shows a significant positive effect of p*erceived usefulness* and a significant positive effect of *perceived ease of use* on the intention to offer equity-based co-financing. Since the coefficient for *existing know-how* is smaller in the combined model TAM8 ($b = 0.330$, Table 5) than for *existing know-how* in model D4 ($b = 0.519$, Table 3), the third condition is met. Thereby, we find support for hypotheses 1 and 2b. In models TAM9 and TAM10, we investigate the effect of *experience* on *perceived usefulness* and *perceived ease of use*. Model TAM9 reveals that *experience* moderates the effect of *perceived usefulness*. In contrast, *experience* has no significant moderating effect on *perceived ease of use*. These findings provide support for hypothesis 3a but no support for hypothesis 3b.

Conclusively, in the context of equity-based co-financing, *existing know-how* is mediated through *perceived usefulness* (supporting hypothesis 2b). *Perceived usefulness* and *perceived ease of use* have a significantly positive effect on the acceptance to offer equity-based co-financing (supporting hypotheses 1 and 2a). Eventually, if the decision-makers' banks served a crowdfunding campaign, this increases their perception of usefulness of equity-based co-financing (supporting hypothesis 3a).

5 Discussion

In this study, we look at an intersection topic by drawing from the entrepreneurship literature to bridge the gap to the literature on finance. In terms of further developing crowdfunding, our goal is to support platform operators by arousing the interest of the regional banks' decision-makers and researchers in the potentials of participative co-financing. In our study, we investigate the intention of 108 decision-makers from an association of German regional banks towards participative co-financing. We find significant acceptance of decision-makers for financial-return co-financing. This observation is not surprising since lending- and equity-based crowdfunding are closely related to the banks' business model (Deutscher Sparkassen- und Giroverband 2019). For lending-based co-financing, the mean intention and number of significant variables are highest. Since credit financing is the regional banks' core business, decision-makers are most capable of evaluating potential synergies and target groups that emanate at the intersections of lending-based crowdfunding and established banking.

Due to our twofold approach, we explore specific potentials that affect the decision-makers' intention and investigate the acceptance of participative co-financing. Analyzing the direct effects of participative co-financing allows us to identify potentials that have a particular appeal to decision-makers. On the one hand, we believe that our results have great practical relevance. On the other hand, a more detailed analysis of the potentials will improve the understanding of the decision-makers' motivations. For example, we would like to encourage researchers to explore why the effect of the potential to be perceived as innovative is so strong.

The framework we develop in Fig. 2 provides an overview of the characteristics of financial-return crowdfunding and regional banks, based on which we argue for a compatibility of both means of financing. In terms of our theoretical foundation, our framework encompasses the TAM showing where the potential synergies originate from that we use to reflect the respective constructs of the TAM. Hence, the framework supports our process of deriving emanating potential synergies, yet the TAM serves as our primary theory to investigate the acceptance of participative co-financing. Employing the TAM, we can show that the potential synergies and target groups reflect the usefulness of participative co-financing, increasing the acceptance to trial and integrate this innovative financing technique. Our findings about experience indicate how important it is to practically introduce the potentials of financial-return crowdfunding to decision-makers to increase acceptance and enable the anticipation of innovative potentials. In the following sections, we delve deeper into interpreting the direct effects and the TAM.

5.1 Evaluating perceived usefulness

We begin with discussing potentials that reflect usefulness and therefore affect the intention to offer participative co-financing. While both types of financial-return crowdfunding are closely related, we find that the same variables affect each type

differently. Regarding potential synergies of lending-based co-financing, we find that being perceived as innovative and enabling cross-selling are significant variables.

The potential for cross-selling has a significant effect on the intention to offer lending-based co-financing. This effect could be explainable with crowdfunding being perceived as a marketing tool (Xu et al. 2018). Additionally, crowdfunding enables an extensive outreach to potential customers, thereby enabling to sell products to the crowdfunding participants. Participating in crowdfunding is especially popular among younger people (Klöhn and Hornuf 2012; Ramos and Gonzalez 2016). Hence, a more youthful customer segment may be reachable. Decision-makers might hope to profit from cross-selling to a young customer segment by offering participative co-financing.

The observation that decision-makers see in lending-based co-financing the potential of being perceived as innovative may just be an indicator of the obvious: namely, that participative co-financing is an innovative technique (Jovanović 2019; Walthoff-Borm et al. 2018). Moreover, this effect reflects that decision-makers perceive participative co-financing as innovative themselves. Further, the effect fits the motivation of this study. A core motivation is to support regional banks in pursuing an innovation strategy that enhances their strengths. The observation suggests that decision-makers would consider participative co-financing as part of their innovation strategy.

However, it remains unclear whether decision-makers understand participative crowdfunding as a technique to enhance their strengths. We observe that the potential to foster the community does not significantly affect the intention of decision-makers. The low importance of communal orientation raises questions in two directions. First, it is questionable whether regional banks understand crowdfunding mechanisms well enough to assess the added value that the participative character of crowdfunding offers, for example, for their community. On the other hand, it is questionable how connected regional banks feel with their region. We suspect that regional banks have not yet recognized the potential of civic crowdfunding to foster their community (Lee et al. 2019).

Regarding potential synergies of equity-based co-financing, we find that only being perceived as innovative has a significant effect, likely for the same reasons as for lending-based co-financing. Again, fostering the community is not seen as a relevant potential. Since regional banks focus on credit financing, we assume that equity-related products are not in their portfolio, impeding the potential to enable cross-selling.

Next, we discuss potential target groups for both types of financial-return co-financing. Our results show a significant effect to offer lending-based co-financing to three target groups. The target groups individual persons, startups, and SMEs have a significant positive effect on the intention to offer lending-based co-financing. All three target groups have in common that they are economically oriented. In comparison, cultural initiatives are often non-profit-oriented or do not necessarily pursue an economic interest. The results indicate that decision-makers prefer economically oriented target groups for participative co-financing. Presumably, decision-makers expect a higher own profit from targeting these groups. The risk expectations of startups seem to play a minor role for decision-makers since startups have a significant effect, although a high default risk is assumable for startups. Therefore, startups are usually rather unsuitable for credit financing. The fact that startups significantly affect the intention to offer lending-based co-financing is surprising because banks

typically do not provide risk capital for startups. Nevertheless, apparently, decision-makers share their assessment of the suitability of crowdfunding for startups with the existing literature on crowdfunding (e.g., De Buysere et al. 2012; Paschen 2017).

The observation that cultural initiatives are seen as an unsuitable target group is consistent with the observation that fostering the community is not seen as a potential for participative co-financing. After all, cultural initiatives are often projects organized to benefit a community and thus promote community life but have no explicit profit orientation. Even if the overall result is consistent, it is surprising that the potential for strengthening regional orientation through participative co-financing is not considered as relevant by regional banks. After all, regional banks are essential for their local economies (Flögel and Gärtner 2018) and also have a commonwealth-orientation (Deutscher Sparkassen- und Giroverband 2019; Manger-Nestler 2020). The fact that cultural activities have no significant effect on the decision-makers' intention contradicts our expectations. For example, Allison et al. (2015) and Moon and Hwang (2018) discovered a positive relation between crowdfunding and cultural or prosocial initiatives. The observation might suggest that for many regional banks, regional orientation has a secondary rank.

In the context of equity-based co-financing, it is not surprising that decision-makers do not consider individuals and cultural initiatives as suitable. Financing these groups with equity is unconventional. In contrast, financing companies with equity is prevailing. Therefore, it is not surprising that startups are considered as a significant target group. However, it is questionable why decision-makers do not consider SMEs as a suitable target group financeable with equity-based co-financing. Especially since empirical data on this form of equity-based financing are scarce (Eldridge et al. 2021), this observation opens up opportunities for future research.

Summarizing our findings about potential target groups, high relevance is attributed to startups in the context of financial-return co-financing. Surprisingly, decision-makers only attribute little relevance to financing cultural initiatives with participative co-financing. Furthermore, in the context of equity-based co-financing, SMEs are not considered as a significant target group. These findings contrast with the potentials we describe in chapter 2. This observation leads to the assumption that many decision-makers do not yet have a clear idea of the potentials of participative co-financing.

Regarding the simulation of the TAM, we measure perceived usefulness based on potential synergies and potential target groups. We develop a reliable construct of perceived usefulness as indicated by our high Cronbach's Alpha. We claim our hypothesis 1 according to the TAM. We predict that the perceived usefulness of financial-return co-financing positively affects the intention to use this new financing technique. As expected, supporting our hypothesis, our results indicate a positive effect of perceived usefulness on the intention to offer either lending- or equity-based co-financing.

By exploring the direct effects of all variables reflected in the construct, we find positive relations for all variables, but only significant effects for some variables, providing a deeper understanding of how to improve the banks' acceptance of participative co-financing. The results suggest that decision-makers generally accept this novel financing technique. We conclude that decision-makers perceive participative co-financing as a useful technique that enhances organizational performance.

5.2 Evaluating perceived ease of use

We operationalize existing know-how to measure perceived ease of use. For both types of financial-return crowdfunding, we receive significant positive effects for perceived ease of use on the intention to offer participative co-financing. Based on these direct effects on the decision-makers' intention, we conceive that existing know-how facilitates the integration of participative co-financing by reducing respective efforts. However, we also are surprised about the strong effect of existing know-how on equity-based co-financing since regional banks regularly lack know-how in equity financing (Jovanović 2019). We suspect this observation may also induce uncertainty among decision-makers about the actual applicability of their existing know-how to crowdfunding.

However, according to the TAM (Davis 1989), our results achieve the expected effect by confirming a positive effect of perceived ease of use on the intention to offer this novel financing technique, in line with our hypothesis 2a. Also, supporting our hypothesis 2b, according to the prediction of the TAM, perceived usefulness partially mediates existing know-how. We conclude that existing know-how positively contributes to the acceptance of participative co-financing by reducing the effort of integration.

Finally, we observe that the effect of perceived ease of use decreases when combined with perceived usefulness. This observation is particularly evident in the model TAM4. With our observation, we confirm the findings of previous studies, namely that the effect of perceived ease of use is regularly much smaller compared to perceived usefulness (e.g., Davis 1989; King and He 2006; Legris et al. 2003).

5.3 Experiences with crowdfunding

The results of the regressions in Table 4 show that business-related experiences, which we operationalize through a binary variable indicating whether a bank has already served a crowdfunding campaign, play a significant role in the intentions about participative co-financing. According to the results in Table 4, experience affects lending- and equity-based co-financing similarly by moderating the assessment of potentials positively. Experience moderates the same independent variables for both dependent variables.

Apparently, experienced decision-makers have a stronger sense of being perceived as innovative by offering participative co-financing than their inexperienced counterparts. This observation might indicate that experience even increases the belief about crowdfunding being an innovative technique, only reinforcing the usefulness, instead of dissolving too high expectations. Further, experienced decision-makers are reassured to offer participative co-financing to startups. Therefore, their former experience might encourage them to address startups as part of their own co-financing business model.

Eventually, we are surprised to find a positive effect of experience on targeting cultural initiatives. Recalling the results from our analysis of potential target groups in Table 3, we did not reveal a significant relationship between targeting cultural

initiatives and participative co-financing. However, experienced decision-makers seem to reconsider how cultural initiatives can benefit from participative co-financing. We interpret this finding as a sign of decision-makers realizing the potentials of crowdfunding for communities as described in 2.5.2 (Lee et al. 2019). We analyze the non-significance of the direct effect of targeting cultural initiatives on participative co-financing as a lack of knowledge. The significant interaction between targeting cultural initiatives and experience can be interpreted as a sign of learning about the potentials of crowdfunding for communal and cultural orientation. Therefore, enabling decision-makers to gather experiences will be essential to advancing the regional banks' perspective on participative co-financing.

Regarding the TAM, in our hypotheses 3a and 3b, we claim a positive moderating effect of experience on the relation of both internal beliefs on the decision-makers' behavioral intention. We do not find any significant interaction of experience and perceived ease of use against our predictions according to hypothesis 3b. In terms of perceived usefulness and experience, we find diverging results compared to the separately analyzed potentials in Table 4. For lending-based co-financing, the separately analyzed potentials reveal a moderating effect of experience on the potentials of being perceived as innovative, for start-ups, and for cultural initiatives as potential target groups. Therefore, according to our hypothesis 3a, we would expect a significant interaction between experience and perceived usefulness in the context of lending-based co-financing. However, we find no support for hypothesis 3a in the context of lending-based co-financing. We attribute the divergence to the constructed constitution of perceived usefulness. Since perceived usefulness combines multiple variables, the effects of variables likely offset each other. Therefore, separately analyzing direct effects helps to better understand the effects of reflective variables of perceived usefulness.

Nevertheless, while the results show no significant moderation of experience for lending-based co-financing (no support for hypothesis 3a), we find significant moderation of perceived usefulness through experience in an equity-based context (support for hypothesis 3a). We interpret these findings as an indication of experience functioning as a catalyst for innovative thinking. By innovative thinking, we mean that decision-makers leave their accustomed thinking patterns behind to open up for new ideas like equity financing in regional banking. Conclusively, although interaction effects as predicted in the TAM are not as ambiguous as for the direct effects, experience positively affects the intention to offer participative co-financing.

5.4 Theoretical implications

Digitization has reached a level of maturity that involves much more than just mirroring formerly analog processes with software. At today's stage of digitization, information systems are useable to exploit new business processes and augment the value creation of business models. We aim to account for the business process and business model perspective, which decision-makers must consider before coming to

a strategic decision. We surpass the original purpose of the TAM, to explore the acceptance of software that enables entirely new business processes of value creation (Legris et al. 2003).

We employ the TAM to explore the acceptance of participative co-financing even before its extensive integration into regional banks' businesses, as suggested by Legris et al. (2003). To this end, we do not approach users but decision-makers who decide whether to trial and integrate this technique. We consider this adjustment to be appropriate in order to predict the decision on the development of an innovation strategy. We contribute to the advancement of the TAM by employing it in a pre-integration context to predict the strategic decision on a management level.

We deviate from the original items employed to measure perceived usefulness by determining a construct of potential synergies and potential target groups. We undertake these adjustments in line with Marangunić and Granić (2015) and Davis (1989), who claim that adjustments regarding the variables to better suit the system's specifications are common. While we rely on the general concept of the TAM, in our study, we rely on variables that better reflect the specifications of participative co-financing in the sense of emanating potential synergies.

Our findings are consistent with the predictions of the TAM. We find that perceived usefulness and perceived ease of use have a positive effect on the intention of decision-makers. Additionally, we observe a partial mediation of perceived ease of use through perceived usefulness. Our observations support the evidence that perceived usefulness is the stronger predictor compared to perceived ease of use (Legris et al. 2003). Furthermore, in terms of our external variable of experience, we find a positive effect on the decision-makers' intention. Especially in our context, where there have not yet been many opportunities to gather experience, we would like to emphasize the importance of experience in order to mitigate unacceptance at an early stage. Eventually, offering participative co-financing enables regional banks to draw on the financial capital of their regional stakeholders and source their social capital as well (Cai et al. 2021).

5.5 Practical implications

According to our findings, the optimal participative co-financing model from the perspective of regional banks would be to offer lending-based co-financing. Also, regional banks are inclined to address individual persons, startups, and SMEs as target groups; only experienced decision-makers are likely to consider cultural initiatives as well. By offering this financing technique, decision-makers hope to profit from cross-selling and from being perceived as innovative. We are surprised to find that offering participative co-financing to the local community to foster it and enable cultural activities has not received significant support from decision-makers. We expected especially high support for so-called civic crowdfunding because of the banks' objective to support their communities and their regional proximity to local customers (Ahn and Le 2015; Deutscher Sparkassen- und Giroverband 2019; Flögel and Gärtner 2018). This observation poses the question of the extent to which banks consider themselves responsible for their region. On the other hand, banks need to

reason economically and thus prefer target groups that likely bring positive financial returns. The positive influence of experience on the intention to offer some form of crowdfunding is an encouraging finding.

We find, generally, decision-makers seem to be open-minded towards crowdfunding and would accept integrating it. However, our findings also indicate that many decision-makers have not yet fully understood the potentials of participative co-financing. We assume that before regional banks integrate participative co-financing into their innovation strategies, decision-makers must gather more experience. Therefore, we appeal to scholars and practitioners to conduct pilot projects in order to gather more experiences and enable stakeholders from banks and platforms to better assess the potentials of participative co-financing.

The internet promotes the trend towards democratization (e.g., the democratization of knowledge, software, product evaluations, choice of socialization, and free expression). Crowdfunding offers a suitable technique to democratize financing and societal decision processes. If regional banks enable democratic processes through participative co-financing, they can contribute to achieving their corporate social responsibilities (Deutscher Sparkassen- und Giroverband 2019; Salzmann 2013). Banks could use their core competence in financing to engage in a democratic exchange with customers and stakeholders. For one thing, this increases customer-centricity (Diener and Špaček 2021; Lotriet and Dltshego 2020). Banks can support their business clients by developing better products by offering customer-centric financing. Furthermore, through participative co-financing, banks can position themselves as more than just service providers but present themselves as enablers for self-empowerment. If banks make their expertise available to support democratic processes, they can inspire individual and community self-efficacy in their region. Simultaneously, banks offer a trustworthy environment in which crowdfunding can thrive to support effective financing (Cai et al. 2021). As a result, banks could excel because they enable the people's will. By offering participative co-financing, banks could empower themselves.

5.6 Limitations and future research

The results of this study should be interpreted in light of its limitations, providing indications for future studies. Our dataset comes with several caveats. First, we draw on a rather small data set. Second, replies in our survey were given only by single informants, limiting the possibility of achieving a broad assessment of each regional bank and thus impeding the reduction of possible influences of common-method bias (Podsakoff et al. 2003). Third, the data set only consists of replies from one association of regional banks. For banks of other associations, other variables might be more relevant. Future research could pick up our survey and derive more observations from other financial institutions and associations to address these caveats. Future research could also broaden the geographic picture by comparing intentions about participative co-financing of German regional banks with other countries.

Our study is the first to investigate the banks' intention to offer participative co-financing. However, other fields remain open for exploration. Our

study focuses on variables from the fields of potential synergies, potential target groups, and experience. However, additional variables are worth considering. Worthwhile variables could be the potential to use crowdfunding to predict market acceptance or alternative target groups such as sports clubs, educational institutions, or renewable energy providers.

To investigate the compatibility of crowdfunding and regional banks, we develop a framework featuring the intersection of both means of financing (Fig. 2). We derive five key characteristics to compare both financing techniques. Despite a thorough determination of the characteristics, our framework does not claim to be complete. Future studies may expand and deepen the aspects we include in our framework. Further, we hope our framework and representation of the intersection supports future researchers in their attempt to analyze the compatibility of crowdfunding and regional banks. We advocate expanding the framework with non-financial-return crowdfunding.

Furthermore, future research could focus on relevant risks and obstacles that banks consider when evaluating the opportunity to combine crowdfunding and establish financing products. Likewise, future research could investigate which requirements banks issue as conditions to use participative co-financing. The banks' process of integrating participative co-financing could be worth exploring as well. In this context, banks need to make a make-or-buy decision. Moreover, crowdfunding platforms and banks need to decide about strategic partnerships. The development of respective processes also requires that the geographic scope of the regional banks' participative co-financing needs to be specified. While regional banks are rooted in their area, crowdfunding or participative co-financing can overcome regional limitations. It might be a promising measure for platform providers to offer banks the opportunity to gather experience together to advance participative co-financing further .

We encourage academics and practitioners to investigate and test applications of participative co-financing in order to gather experiences and advance this financing technique. Further experience is the key to advancing participative co-financing successfully. Through a combined approach, banks cannot only expand their digital sales channels but help their customers to gain financial sovereignty. Furthermore, banks might provide the foundation for a sustainable society.

Appendix

See Table 6 .

Table 6 Models of ordered logistic regressions

	Lending-based co-financing					Equity-based co-financing				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Perceived usefulness potential synergies										
Foster community		0.293					0.132			
		(0.252)					(0.213)			
Perceived innovative		1.069**					0.824**			
		(0.324)					(0.291)			
Cross-selling		0.562*					0.086			
		(0.247)					(0.168)			
Perceived usefulness potential Target groups										
TG individuals			0.452*					0.318		
			(0.228)					(0.207)		
TG startups			1.104**					0.590**		
			(0.274)					(0.221)		
TG SMEs			0.621*					0.443		
			(0.282)					(0.226)		
TG cultural initiatives			0.080					0.049		
			(0.224)					(0.201)		
Perceived ease of use										
Existing know-how				0.867**					0.843**	
				(0.186)					(0.146)	
Experience										
Bank served CF					2.368**					2.262**
					(0.681)					(0.687)
Control variables										
Age	− 0.164	− 0.063	− 0.224	− 0.322	− 0.134	− 0.072	− 0.040	− 0.033	− 0.232	− 0.008
	(0.210)	(0.238)	(0.258)	(0.232)	(0.221)	(0.204)	(0.207)	(0.229)	(0.225)	(0.210)
Gender	− 0.402	− 0.713	0.009	− 0.278	− 0.696	0.421	0.376	0.927	0.777	0.174
	(0.584)	(0.612)	(0.567)	(0.685)	(0.655)	(0.447)	(0.696)	(0.613)	(0.579)	(0.477)
Leader	0.289	0.379	0.169	0.124	0.583	− 0.105	− 0.186	− 0.449	− 0.381	0.145
	(0.407)	(0.445)	(0.408)	(0.383)	(0.418)	(0.414)	(0.427)	(0.419)	(0.398)	(0.417)
cut1	− 2.850**	3.084**	3.278*	− 1.009	− 2.725**	− 2.012**	1.722	2.016	− 0.114	− 1.758*
	(0.874)	(1.189)	(1.312)	(1.043)	(0.945)	(0.768)	(1.035)	(1.234)	(0.906)	(0.801)
cut2	− 1.659*	4.997**	5.122**	0.366	− 1.512	− 0.582	3.455**	3.698**	1.578	− 0.307
	(0.840)	(1.273)	(1.384)	(0.989)	(0.918)	(0.733)	(1.066)	(1.281)	(0.853)	(0.777)
cut3	− 0.384	6.904**	7.085**	1.849	− 0.157	0.648	4.915**	5.136**	2.993**	1.015
	(0.831)	(1.333)	(1.452)	(0.982)	(0.915)	(0.733)	(1.103)	(1.343)	(0.850)	(0.791)
cut4	1.438	9.295**	9.528**	3.951**	1.904*	1.833*	6.281**	6.469**	4.333**	2.370**
	(0.834)	(1.403)	(1.543)	(0.997)	(0.944)	(0.773)	(1.135)	(1.371)	(0.851)	(0.880)

Table 6 (continued)

	Lending-based co-financing					Equity-based co-financing				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
Observations	108	108	108	108	108	108	108	108	108	108
p-Value	0.680	0.000	0.000	0.000	0.011	0.797	0.001	0.000	0.000	0.008

*$p<0.05$, **$p<0.01$. Standard errors are reported in parentheses. Models 1 to 5 show the results for ordered logistic regressions with the intention towards lending-based co-financing. Models 6 to 10 show the results for ordered logistic regressions with the intention towards equity-based co-financing.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11573-022-01112-w.

Funding Open Access funding enabled and organized by Projekt DEAL. This study was funded by the Stiftung für die Wissenschaft of the Deutscher Sparkassen- und Giroverband e.V. (DSGV).

Data availability The dataset analyzed during the current study are not publicly available due to confidential company data by the DSGV.

Declarations

Conflict of interests The authors received research support from the DSGV regarding the survey distribution that was conducted for this research project. The evaluation and interpretation of results were carried out independently from the DSGV. The authors have no conflicts of interest to declare relevant to this article's content.

Informed consent All participants in the survey agreed that their anonymized data can be used for the research project and corresponding publications.

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