Equity-based Crowdfunding in the UK

Obtaining Subsequent Financing from a VC after a Successful Campaign

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Submission Date: 20.05.2021

Seminar Date: 01.06.2021

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Examiner: Diamanto Politis

Word count: 17609 words

Abstract

Equity crowdfunding has achieved a high popularity in the UK throughout the last years. However, most researchers within this field primarily focused on the success factors of an equity crowdfunding campaign while only little is known about the post-campaign effects. Therefore, the aim of this thesis is to determine which patterns of characteristics successfully equity crowdfunded companies that received subsequent venture capital have in common. Based on a literature review on equity crowdfunding and reward-based crowdfunding, a statistical analysis was conducted based on secondary data from Pitchbook, an online database for public and private companies. The dataset included ventures which had a successful equity crowdfunding campaign between fiscal years 2015-2020 in the UK. This dataset was divided in two samples, one being the final sample with companies that achieved a venture capital funding after their successful equity crowdfunding campaign, and a control sample where ventures were not able to acquire venture capital. The statistical analysis of the data demonstrated that companies which had more sources of funding before the equity crowdfunding campaign have a higher probability of receiving venture capital funding. Although the correlation is relatively weak, the same statement holds true for companies with a technological product. On this basis, the authors recommend companies that plan to conduct an equity crowdfunding campaign and receive subsequently venture capital to acquire more sources of funding before their campaign. At the same time, it is recommended that if a company operates in the technological sector, to list their equity crowdfunding campaign respectively within that category. Further research is needed to identify the impact of receiving other sources of funding after the equity crowdfunding campaign and what role patents play for technological companies in terms of receiving subsequent venture capital.

Acknowledgements

In successfully completing this master thesis, many people have helped us along the way.

We would like to extend our gratitude first to our Degree Project professors, Joakim Winborg, and especially Andrea Moro, whose guidance has enabled us to gain a great deal of knowledge in crowd investing and conducting statistical analyses. His suggestions have been invaluable in the completion of this paper.

At the same time, we would like to thank our classmates who provided us with helpful feedback throughout the various stages of this course.

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List of Abbreviations

Abbreviation	Explanation
BA	Business angel
CVC	Corporate venture capital firm
ECF	Equity crowdfunding / Crowd investing
RCF	Reward-based crowdfunding
SD	Standard deviation
VC	Venture capital firm

1 Introduction

Within the last few years start-ups have been receiving access to less sophisticated capital from small investors (Hornuf, Schmitt & Stenzhorn, 2018). This has led to new funding opportunities such as equity crowdfunding (ECF), also known as crowd investing, which achieved a high popularity throughout the last years (Block et al., 2018; Cumming, Johan & Zhang, 2018; Cumming, Meoli & Vismara, 2019). Backers in this emerging form of crowdfunding are composed, but not limited to, members of the public. Through this financing form, backers are able to acts as micro investors and purchase equity from these companies (Landström, Parhankangas & Mason, 2019). The high demand of this rather new form of financing can especially be seen in the United Kingdom. From 2013 to 2018 ECF has grown around 1190% achieving an annual market valuation of around 363 million GBP (The Global Alternative Finance Market Benchmarking Report, 2020). However, most of the scholars within the research field of ECF focused primarily on the success of an ECF campaign (Bapna, 2019; Felipe & Ferreira, 2020; Mahmood, Luffarelli & Mukesh, 2019; Piva & Rossi-Lamastra, 2018). Only a limited amount of research has been conducted on the post-campaign effects of ECF.

According to Signori and Vismara (2017), successful ECF campaigns have higher probability of receiving subsequent financing from investors. These findings are supported by the article of Butticè, Di Pietro and Tenca (2020) which states that successful ECF campaigns have a higher probability of receiving venture capital compared to other sources of funding, e.g. business angels. However, both articles only investigated a limited number of variables which could impact the probability of receiving financing from a venture capital firm (VC). At the same time, most of these variables were not campaign-related characteristics, but rather platform-orientated. To illustrate, the paper of Butticè, Di Pietro and Tenca (2020) focused a great part of their research on a comparison between nominal vs non-nominal structure, while Signori and Vismara (2017) investigated the post-campaign scenarios of the venture from a business and ownership status point of view.

In other words, there is a great potential in conducting research regarding the financial effects of successful ECF-funded ventures on a campaign level. Therefore, this paper aims to further investigate if there are certain patterns that successfully ECF-funded companies have in common when it comes to receiving follow-up capital from a VC. This study will examine

several characteristics, including the campaign's relationship with preliminary sources of finances, the industry category, and lastly, the funding amount that was successfully raised.

This leads to following research question:

> *Is there a pattern of characteristics that successfully ECF-funded companies have in common when it comes to receiving subsequent VC funding?*

The study aims to analyze 126 companies which were successfully funded through ECF between fiscal years 2015 to 2020 and received financing from a VC after their campaign. The data will be analyzed through a quantitative research approach. Moreover, the data will be retrieved from online databases, primarily Pitchbook and Crunchbase. This information will then be corroborated within the available data on the ECF platforms where the campaigns have taken place, namely Crowdcube and Seedrs, the two biggest ECF platforms in the United Kingdom (Beauhurst, 2019).

The reasons for choosing the UK as our market of research relies on the fact that the UK is the largest ECF market in Europe, hence this ensures that enough data is available. The ECF funding volume differs significantly between different countries due to differences in regulations (Vismara, 2018). As an example, the ECF market in the UK is expected to have a funding volume of 1.2 billion USD in 2025, while Italy, the second largest market in the EU, will have around 0.15 billion USD (Statista, 2021). Secondly, analyzing the UK ECF market provides sufficient accounting data from smaller and privately held firms (Walthoff-Borm, Vanacker & Collewaert, 2018). Thirdly, most existing equity crowdfunding research has been carried out in the United Kingdom. Therefore, the authors hope to keep contributing to the research field by providing granular information on a representative market and a comparison between their findings and the existing research. Lastly, by using a dataset from one country the collected data is not affected by different regulatory and institutional frameworks (Di Pietro & Butticè, 2020).

2 Theoretical Framework

To understand if ECF ventures are able maximize their chances of securing additional VC funding, it is crucial to define what campaign characteristics could possibly facilitate this phenomenon. This chapter will discuss preliminary research conducted on this topic, while identifying potential theoretical gaps that could be filled with further research. Using the Theoretical Framework as a starting point, the authors define the types of venture capital firms and decide on which ones to discuss in this paper. The next section highlights how having funding rounds from other sources prior to an ECF campaign may function as a form of signalling for attracting further VC investment. A second key factor that is being discussed, is the industry categorization of the ECF company and why it might play a decisive role in securing VC financing. Similarly, the campaign funding amount is discussed as a possible determinant that may influence participation in VC investments. Lastly, we form assumptions related to each of these three variables in the form of four hypotheses.

2.1 Types of VCs

In the article of De Clercq et al. (2006) there is a differentiation in the literature between a professional and corporate VC. However, both can play an important role when it comes to funding new disruptive ventures (Rossi & Martini, 2019).

Chemmanur, Loutskina and Tian (2014) defined a corporate venture capital firm (CVC) as a stand-alone subsidiary of a nonfinancial parent company which invests strategically in firms for the parent company to gain a competitive advantage on the market. Secondly, CVCs invest not only strategically (e.g. buying a company for their expertise in a certain field) but also with a financial purpose. These investments are normally characterized by a managerial compensation practice which is tied to the performance of the parent company (Chemmanur et al., 2014).

In contrast to a CVC, a professional VC does not invest on behalf of the corporate parent but invests the capital of limited partners in start-ups. Limited partners can be business angels (BAs), institutional funds, and corporates (De Clercq et al., 2006; Lahr & Trombley, 2020; Lerner & Nanda, 2020). While the primary goal of a CVC is to gain a competitive advantage on the market through investing in start-ups, the prime goal of a professional VC is to gain a high return on investment (Hellmann, 2002; Ma, 2020). Furthermore, professional VCs look for start-ups which have a high potential of growth in the future, while a CVC invests in

companies which have a strategic fit to the parent company (Siegel, Siegel and MacMillan, 1988; Hellmann, 2002; Röhm, 2018). Another differentiation is the potential exit method which is planned with the investments. According to De Clercq et al. (2006) most CVCs have not planned an exit method while professional VCs plan to make an IPO or trade sale with their invested companies.

Only a limited number of datasets containing information regarding CVCs investments are available in our data gathering tool. Therefore, this paper will focus solely on professional VCs when it comes to subsequent funding of successful ECF campaigns.

2.2 Signaling in Equity-based Crowdfunding

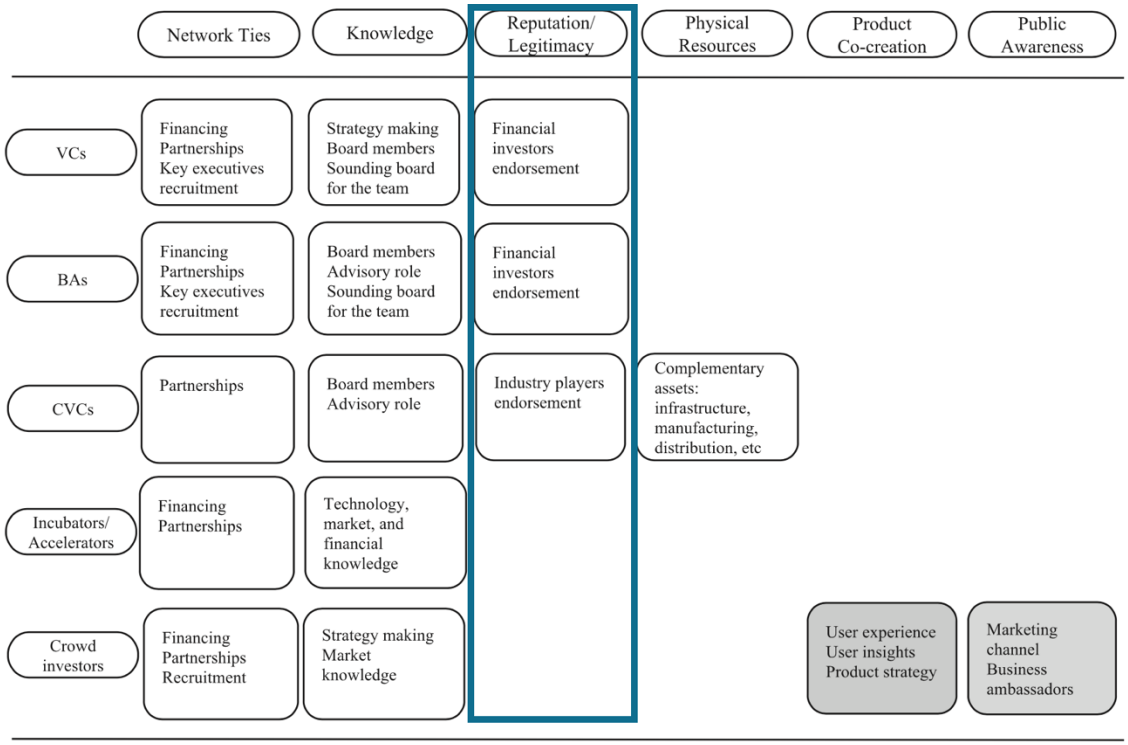
2.2.1 Signals for receiving subsequent funding from a VC

The signaling theory where one party conveys some information about itself to another party (Connelly, Certo, Ireland & Reutzel, 2011) can, according to several scholars, be applied to equity crowdfunding as well (Ahlers et al., 2015; Drover, Wood & Zacharakis, 2016; Kleinert, Volkmann & Grünhagen, 2020; Piva & Rossi-Lamastra, 2018; Steigenberger & Wilhelm, 2018; Vismara, 2018). For instance, Vismara et al. (2018) find in their study about ECF that early-bird investors can also attract a high amount of late crowd investors, while Drover et al. (2016) draws the conclusion in their article that crowdfunding performance impacts the VC's screening decisions. Butticè, Di Pietro & Tenca (2020) findings suggest that a successfully ECF-funded company has a higher probability of receiving capital from a VC. The reasoning behind this is that a successful ECF campaign could signal a positive market appeal and lower information asymmetries. Also, Signori and Vismara's (2017) study finds a positive relation between successful ECF-funded companies and the probability of receiving funding from a VC. However, there are some opposing views on this topic. For instance, researchers suggest that crowd investors decide to invest based on own experience, what they are passionate about, their geographical proximity and lastly by peer influence (Di Pietro, Prencipe & Majchrzak, 2018; Keongtae Kim & Viswanathan, 2019; Pietro, Bogers & Prencipe, 2021; Shafi, 2021; Wallmeroth, 2019). Additionally, most of these crowd investors do not conduct an evaluation process by looking at the possible financial returns of firms (Cumming, Johan & Zhang, 2018; Grilli, 2019; Marek Zinecker et al., 2021).

2.2.2 Additional Sources of Finance as a form of signaling

Beauhurst, a well-known consultancy firm in the UK, conducted a study in 2015 that shows that around 21% of all early-stage investments and more than 35% of all seed-stage deals in the UK took place on an ECF platform (Beauhurst, 2015). Early-stage start-ups who turn to crowd investing for their initial capital can experience concrete benefits according to the study of Di Pietro, Prencipe, and Majchrzak (2018). In their article, the authors state that, besides providing expected benefits such as network ties and knowledge, ECF also has additional inputs in comparison to other traditional sources of financing, such as VCs, BAs, CVCs, and incubators/accelerators. On the one hand, possibilities for product co-creation arise, this involves strategic discussions regarding the user experience, user insights, and overall product development. On the other hand, launching a venture on an ECF platform has the potential to raise public awareness and gain market insights while forming eventual ambassadors. Although ECF provides additional inputs that early-stage companies can use, it still lacks one particular benefit crowd investors are unable to provide. This refers to the potential to build reputation and legitimacy in the industry in which they operate (see Figure 1).

Figure 1: Early-stage Investors versus Crowd's Inputs provided to new ventures, based on Di Pietro, Prencipe & Majchrzak, 2018, p.62.



Legitimacy plays an important role in the world of entrepreneurship as it helps to avoid failures associated with the "liability of newness" (Delmar & Shane, 2004). It is important to establish legitimacy to attract different monetary resources. This includes customers, business partners and entities that can provide financial support (Radu-Lefebvre, Loué & Redien-Collot, 2019). Establishing legitimacy and reputation are crucial forms of signalling for investor-backed start-ups that aim to seek further funding later on (Delmar & Shane, 2004).

One important source of financing that stands out when it comes to building legitimacy are business angels (BAs). Entrepreneurs perceive BAs as a valuable asset, especially when they supply a strong post-investment legitimacy (Collewaert & Manigart, 2016). Opposite to crowd investors, BAs have similar investments patterns as VCs (Cumming, Johan & Zhang, 2018). A BA is a net-worth individual who has been, in most cases, a successful entrepreneur in the past and conducts small and medium-sized equity investments in young companies (Grilli, 2019; Marek Zinecker et al., 2021). Most BA's investments happen after a thorough analysis of the venture, which includes scanning the financials in depth, evaluate the business plan of the company, talk to the founders, and conduct due diligence. The benefit of BA investments for companies is most of time the capital they receive but also the industry knowledge and network which a BA can offer (Bonini et al., 2018). A thorough analysis by a BA leads to a higher degree of company reliability. Ultimately, this could lead to a reduction of information asymmetry. In comparison, since most ECF campaigns are only active for 9 weeks on average (Fundera, 2020), crowd investors only have a limited amount of time to analyze a company. Moreover, they do not receive the information a BA is able to get access to. Further, due to their small investments, crowd investors do not have the possibility to meet the founders in person (Wallmeroth, 2019).

Another source of finance that helps reduce information asymmetry refers to capital provided by governmental institutions (Islam, Fremeth & Marcus, 2018). Specifically grants seem to attract VC funding through their complex and thorough application process (Islam, Fremeth & Marcus, 2018). According to the principles of signalling as a way to reduce information asymmetry, securing government grants has been positively associated with concluding a successful campaign on an ECF platform (Piva & Rossi-Lamastra, 2018; Shafi, 2021). Similarly, private networks such as business accelerators and incubators have emerged as financial intermediaries between early stage financing and VC investment for start-ups (Lerner & Nanda, 2020). New ventures can benefit from accelerators and incubators by receiving advice, network access, financial help, as well as ties with future investors (Block et al., 2018a).

The latter is especially true when it comes to corporate accelerators and incubators which usually open doors for start-ups to raise further funding either internally or externally (Pietro, Bogers & Prencipe, 2021).

Overall, based on the literature presented it can be assumed that having raised money from BAs, grants, accelerators, or incubators prior to launching an ECF campaign represents a positive form of signalling for a VC. Therefore, the following hypothesis is presented:

> **H1:** A higher number of other sources of funding before a successful ECF campaign increases the likelihood of obtaining subsequent VC financing.

2.3 Type of ECF ventures: Tech vs non-Tech

In their early stages, ventures face a wide range of challenges, including attracting traditional sources of finance (De Clercq et al., 2006). Due to early stage ventures' lack of traction and history of cash flow, start-ups fail to persuade and therefore secure capital from bank loans, angel investors and VCs (Landström, Parhankangas and Mason, 2019). Nonetheless, companies offering high technological value, hereafter referred to as "tech ventures or technological companies", are often the ones to overcome these challenges (Felipe & Ferreira, 2020). At the same time, due to the fierce competition between early-stage companies in emerging entrepreneurial territory such as the UK, innovation is growing faster than traditional investors can keep up with. Thus, tech ventures have turned to more novel financing mechanisms, including crowdfunding (Mollick, 2013).

2.3.1 Industry-level effect on Attracting Subsequent Financing

In the field of crowdfunding, the majority of research that has been conducted focuses on the impact of new technology on attracting professional investors after a successful reward-based crowdfunding (RCF) campaign (Felipe & Ferreira, 2020). Roma, Petruzzelli, and Perrone (2017) examined a database of 131 successful tech-orientated Kickstarter campaigns with the aim of understanding whether this sector had a high likelihood of obtaining subsequent financing after the campaign. The authors suggest that tech ventures must rely on successive funding rounds to grow and sustain the business. Therefore, the chances of obtaining follow-up capital are greater. Interestingly, the research by Roma et al. (2017) concluded that indeed tech ventures have a high likelihood of obtaining subsequent financing, only if patents for the technological product ideas are granted. In such cases, patents and trademarks are seen as

additional forms of signaling in RCF, acting as information in regards to the innovativeness and market potential (Roma, Messeni Petruzzelli & Perrone, 2017a). Opposite to these results, patents, in general, do not seem to play a determinant role in the likelihood of receiving subsequent financing after an ECF campaign. (Hornuf, Schmitt & Stenzhorn, 2018). However, both studies (Hornuf, Schmitt & Stenzhorn, 2018; Roma, Messeni Petruzzelli & Perrone, 2017a) fail to propose an empirical comparison between tech and non-tech ventures, and their likelihood of receiving subsequent financing from traditional sources, such as VCs.

On the contrary, Kaminski, Hopp and Tykvovaá (2019) bring forward a quantitative study in regard to the industry-level effect on predicting VC investment after a successful RCF campaign. The authors quantitative research shows the likelihood for RCF-funded companies to obtain subsequent financing was significantly higher for software, hardware and electronics products and services. The authors suggest that these sectors are characterized by a high level of market potential, scalability, and investment. Therefore, the validation of the 'crowd' contributes to the VC assessment of the industry trend.

These findings are consistent with other studies that show how traditional investors contribute to the growth of the investment ratio for technology firms. In fact, VCs are more likely to provide subsequent financing to crowdfunded companies that operate in fields such as technology, design and video-Games (Thies et al., 2019). Experts suggest that this phenomenon could be explained in two ways. Firstly, technological inventions, if patented, are difficult to recreate (Rossi et al., 2020). Secondly, the creators of new technological products often require high amounts of funding to market them, hence they need external investors (Thies et al., 2019).

2.3.2 Advantage of non-high-tech firms on ECF

In the field of equity-crowdfunding, there is a lack of research regarding what role the industry plays when it comes to obtaining subsequent financing. A relevant study regarding this topic has been conducted by Borello, De Crescenzo & Pichler (2019) whose findings demonstrate that non-high-tech firms are more likely to be financed through crowd investing compared to high-tech ones. According to the authors, this phenomenon may be the result of the fact that micro-investors understand better the functionality of traditional products and that high-tech projects have an element of uncertainty for them (Borello, De Crescenzo & Pichler, 2019).

Overall, it is difficult to make a set of general assumptions on how ventures funded through crowd investing will develop when attempting to obtain further funding, as two opposing outcome scenarios seem likely. On one hand, empirical evidence suggests a positive correlation

between crowdfunded tech companies and the types of businesses that VC firms favor to invest in (Kaminski, Hopp & Tykvová, 2019; Roma, Messeni Petruzzelli & Perrone, 2017; Rossi et al., 2020; Thies et al., 2019) . On the other hand, research shows that even when presented with patents, there is either no correlation or they are rather at a disadvantage when it comes to their ECF performance (Borello, De Crescenzo & Pichler, 2019; Hornuf, Schmitt & Stenzhorn, 2018). That being said, the strong empirical evidence in RCF as well as the existing industry comparison represent a need for additional research (Kaminski, Hopp & Tykvová, 2019). Furthermore, micro-investors on an ECF platform and VCs differ considerably in terms of technological knowledge, financial interest and roles they wish to have as investors (De Clercq et al., 2006). Therefore, the following hypothesis is proposed:

> **H2:** Successfully ECF-funded companies in the technological sector are more likely to obtain subsequent financing from a VC than companies in the non-technological sector.

2.4 Equity-based Campaign Funding

In the field of crowdfunding, whether it involves RCF or ECF, the funding ratio, between the pledged and raised funds, has been regarded as one of the most crucial indicators when it comes to proving the market potential (Landström, Parhankangas & Mason, 2019). Nevertheless, there are both risks and benefits associated with this campaign metric. On the one hand, reaching the established funding goal may hinder entrepreneurial success, as entrepreneurs overestimate market potential (Mollick, 2013). On the other hand, it may also have a positive effect when it comes to building legitimacy for further investments, as the signaling aspect seems to lower uncertainties (Petty & Gruber, 2011)

2.4.1 Funding outcomes on RCF

In the area of RCF, Thies et al. (2019) studied a database of 56,000 crowdfunding campaigns that raised early-stage investment on Kickstarter and follow-up VC funding between 2009 and 2016. Thies et al. (2019) most important findings reveal that having reached the funding goal in an RCF campaign, does present a positive effect on receiving VC funding at a later stage. The authors find that professional investors view this success metric as a positive sign for market demand and are, therefore, more inclined to allocate their financial stake in such projects. In the same manner, Roma, Messeni Petruzzelli & Perrone (2017) conducted a study of 105 projects on Kickstarter. In their research, the authors reveal a positive relation between the amount of money pledged on the reward-based crowdfunding campaign and the likelihood

of attracting subsequent financing from professional investors. At the same time, they identified the presence of patents as a correlation of their findings in the statistical analysis. In other words, the higher the pledged campaign amount on RCF, the higher the probabilities of obtaining subsequent financing from VCs. This effect is eventually enhanced by the presence of patents granted to the new product or service. This phenomenon of imitating the behavior of others' actions and decisions is called herding behavior (Anderson & Holt, 1997). A similarly important contribution to the crowdfunding field is the idea of reverse herding. Research has shown that just like the higher amount of crowd investment leads to increased follow-on funding, smaller amounts of contributions to a campaign result in a smaller follow-on contribution, endangering that way the venture's rate of success to receive follow-up funding (Zaggl & Block, 2019).

2.4.2 Funding outcomes on ECF

In the field of ECF, little has been researched about the relationship between the funding amount and the likelihood of obtaining future financing. Hornuf, Schmitt and Stenzhorn (2018) conducted a relevant study in this area of research, in which data from 13 ECF platforms in the UK and Germany were obtained, including information of 413 start-ups that successfully completed equity-based crowdfunding campaigns between 2011 and 2016. In their study, the authors find that high levels of crowd-participation have a positive effect on the likelihood of the firm's success, but do not present any statistically relevant association with receiving subsequent financing from a VC firm. Nevertheless, Hornuf et al. (2018) note that new ventures which secured over-funding through an ECF campaign would enter a pre-seed or seed phase with a stronger financial condition than those which received less funding or none at all. As an opposite view, the authors Mollick and Nanda (2015) suggest that when it comes to crowdfunding campaigns, backers' support represents an effective signal of product quality. Therefore, the authors argue that the greater the number of backers is, the greater are the chances of further funding. Yet, in this article, this statement is only associated with RCF, while little mention is made to ECF.

The study conducted by Hornuf et al. (2018) is the only one in the field of ECF that provides empirical data on the relevance, or lack thereof, that the funding size has when it comes to receiving subsequent financing. However, there are inherent limitations to this study. First, the authors concentrate their research on Germany and the UK as two comparable geographical areas in the field of crowd investing. Consequently, they are unable to differentiate whether funding influences companies established within one of these countries. Secondly, the authors

collected their data from 13 ECF platforms with different funding models, and lastly, the research took place when ECF had just begun to emerge as a funding source alternative.

Overall, crowdfunding research, although scarce in terms of crowd investing, has demonstrated in its majority that the achievement of a funding goal may positively contribute to the likelihood of receiving further financings from conventional sources (Thies et al., 2019). This becomes of greater relevance in the growing and fast-changing landscape of emerging innovations and derived competitiveness. Based on these findings, the following two hypotheses have been identified:

H3a: Companies that have raised a large amount of funding in a successful ECF campaign are most likely to receive subsequent financing from a VC.

H3b: The higher the amount of funding a company raises in a successful ECF campaign, the higher the amount of subsequent VC funding it obtains.

2.5 Final hypotheses

The authors of this paper investigate the following hypotheses:

H1: A higher number of other sources of funding before a successful ECF campaign increases the likelihood of obtaining subsequent VC financing.

H2: Successfully ECF-funded companies in the technological sector are more likely to obtain subsequent financing from a VC than companies in the non-technological sector.

H3a: Companies that have raised a large amount of funding in a successful ECF campaign are most likely to receive subsequent financing from a VC.

H3b: The higher the amount of funding a company raises in a successful ECF campaign, the higher the amount of subsequent VC funding it obtains.

3 Research Methodology

In this chapter, the authors provide an in-depth look at the methodology and design used to conduct this new empirical study. Moreover, a description of the data collection and sampling process is presented in detail. The chapter concludes with a discussion and justification of the selected variables. This section includes a categorization of predictive and outcome variables used to emphasize the concept of causality in the research.

3.1 Research Design and Method

This paper presents a deductive research approach based on the analysis of quantitative data. The study aims to identify a certain pattern of characteristics common to all ECF-funded companies that received subsequent VC funding. Therefore, previous literature on the topic of ECF and RCF has been analyzed to form four hypotheses and pinpoint potential variables (Di Pietro & Butticè, 2020; Felipe & Ferreira, 2020; Signori & Vismara, 2017; Thies et al., 2019; Walthoff-Borm, Vanacker & Collewaert, 2018).

Quantitative research methods are built on experiments, surveys, systemic observation and secondary research (Et Al Bell, 2018; Saunders, Lewis & Thornhill, 2007), the authors decided to choose the latest. The reasoning behind this decision is that secondary research uses a larger volume of data and leads to a higher sample size than qualitative approaches. Moreover, secondary data enables the authors to control their results to a selected control sample (Et Al Bell, 2018). In short, the aforementioned aspects would eventually lead to more representative results (Saunders, Lewis & Thornhill, 2007). In order to determine whether or not there is a relationship between the variables without the researchers interfering, the authors chose a 'descriptive' research design, specifically a correlational design. The statistical analysis will be conducted on a sample of 126 firms. These firms are companies that received VC after their successful ECF campaign. Further, the control sample consists of 868 companies. These represent the companies that did not receive VC after their successful ECF campaign.

3.2 Data Collection and Sampling

3.2.1 Data Collection Tool

The aim of this quantitative research consists of testing four hypotheses. The authors intend to investigate whether the characteristics of companies with respect to these hypotheses play any role in receiving subsequent financing of a VC after a successful ECF campaign. As mentioned

in section 3.1, the collected data consists of secondary datasets and will be analyzed by the hand of statistical analyses. The data will be primarily collected from Pitchbook, a database which focuses on collecting information of public and private companies. To ensure the accuracy of the data, the information retrieved on Pitchbook will be cross-checked on Crunchbase, which is another database for public and private companies. At the same time, at least 10% of the campaign-related entries of each dataset will be corroborated on the ECF platforms where the respective campaign took place, these are either Crowdcube or Seedrs. The table below gives a brief overview on how Pitchbook and Crunchbase acquire their data:

Table 1: Data collection tools

	Pitchbook	**Crunchbase**
Data Collection Process	1. Machine learning to gather real-time data. It updates it every 5 minutes. 2. Data is reviewed by natural language technology processing. 3. 600 quality researchers inspect the data before publishing (Pitchbook, 2020)	1. 3,500 Investment Firms submitting portfolios (status, 2021). 2. Community of entrepreneurs 3. AI and machine learning to verify data. 4. Expert analysts inspect data before publishing (Crunchbase, 2020).

3.2.2 Data collection & sampling

As mentioned in section 3.2.1 the data was collected through Pitchbook and cross-checked through Crunchbase and the respective ECF platforms. To obtain the exported data, the authors applied a filter to their dataset that only included companies with a successful ECF campaign from fiscal years 2015 to 2020. This sum represents a total 1.128 companies. From these 1.128 companies, 868 companies were subtracted which did not receive any sort of VC funding after their ECF-campaign which led to a final number of 260 companies. Additionally, the authors have excluded from these 260 companies those ventures that also received VC funding before the ECF campaign which consisted of a total of 130 companies. The reason for this exclusion is to avoid a VC bias towards companies that had previous traction within the venture capital landscape. This statement is supported by the study of CBInsights (2018) which showed that almost every second company that received VC in the US were also able to raise a second

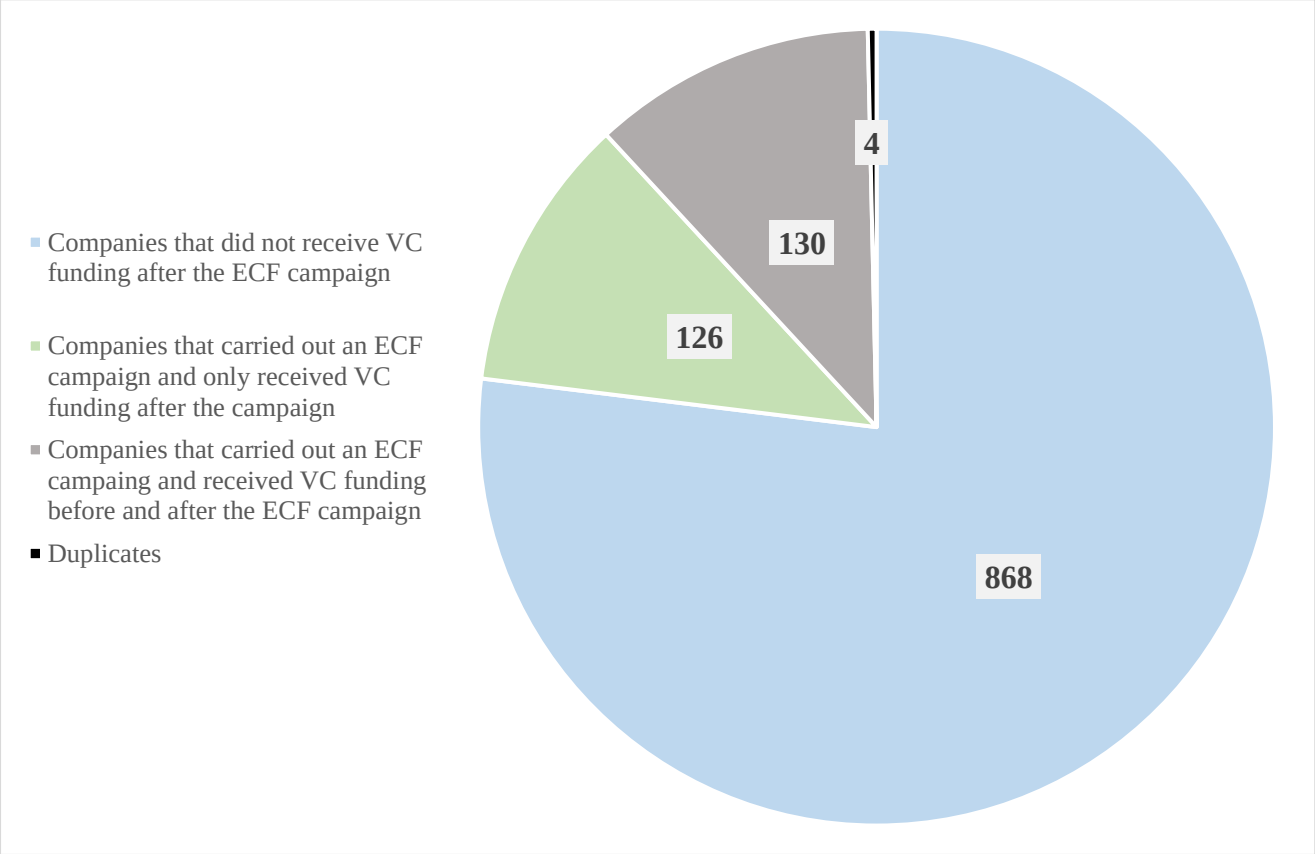
round. Lastly, the authors spotted 4 duplicates in the datasets which were deleted. Ultimately, the final sample consists of 126 companies that received VC after their successful ECF campaign throughout the fiscal years of 2015 up until 2020. The selection criteria for the sample selection are summarized in the table below.

Table 2: Selection process of data collection

Selection Criteria	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
Companies that carried out an ECF campaign	179	179	180	191	176	223	**1.128**
Subtraction of companies that did not receive VC funding after the ECF campaign	149	145	138	149	132	155	**868**
Subtraction of companies that received some sort of VC funding prior the ECF campaign	15	17	21	21	22	34	**130**
Subtraction of duplicates	2	0	0	0	2	0	**4**
Total Sample: Companies that carried out an ECF campaign and received VC funding from 2015<	13	17	21	21	20	34	**126**

The purpose of this study is to evaluate the effectiveness of ECF among companies between 2015 and 2020, with respect to receiving subsequent VC funding. This will be achieved by examining a control sample. Within the above-mentioned database, the authors compare the 126 ECF-funded companies that were able to secure subsequent VC financing and the 868 ECF-funded companies that were unable to do so. These 868 companies will be allocated as the Control Sample as it enables the researchers to achieve a higher reliability in their study (Et Al Bell, 2018). The pie chart below presents an overview of the database division.

Figure 2: Companies that carried out an ECF campaign from FY 2015-2020



The following table illustrates the Final Sample and Control Sample for this study:

Table 3: Final Sample and Control Sample

Summary:		
Companies that did not receive VC funding after the ECF campaign	**Control Sample**	**868**
Companies that received VC funding only after the ECF campaign	**Final Sample**	**126**

3.3 Variables

In this study five variables for testing the hypotheses have been identified. These variables consist of binary and continuous types and are categorized as predictor (also known as independent variables) or outcome variables (also known as dependent variables). Table 4 provides an overview of this categorization.

Table 4: Variables

Variables:	Number of other sources of funding the company received before ECF campaign	Technological / non-technological company (1 = technological, 0 = non-technological)	Funding amount in ECF campaign (in USD*)	Received VC funding after ECF campaign (1 = received VC after ECF campaign, 0 = did not receive VC after ECF campaign)	Amount of received VC funding after ECF campaign (in USD*)
Type:	Continuous	Binary	Continuous	Binary	Continuous
Classification:	Predictor Var.	Predictor Var.	Predictor Var.	Outcome Var.	Outcome Var.

**Since the provided funding amounts from the databases are in USD the authors decided to use USD as the main currency of their study.*

3.3.1 Predictor Variables

Predictor variables are variables which could have an impact on a certain outcome (Saunders, Lewis & Thornhill, 2007). Accordingly, the following variables have been identified: Firstly, the number of other sources of funding a company received before their ECF-campaign. Secondly, if the company belongs to the technological or non-technological sector. Thirdly, the raised and subsequently received funding amount in the ECF campaign.

3.3.2 Outcome Variable

The outcome variables indicate whether or not the predictor is associated with these variables (Easterby-Smith et al., 2021). The first outcome variable in this study refers to whether the company received subsequent VC funding after their ECF campaign or not. Subsequently, the second outcomes variable represents the funding amount of the VC. The operationalization of the variables will be discussed in the following chapter.

3.4 Operationalization

Through the literature the authors have identified different variables for their research. Consequently, the next step revolves around investigating these variables. Hence, they ought to be operationalized as a basis for the empirical research. The following section will present and explain how the variables have been meticulously operationalized.

3.4.1 Successful ECF campaign

Previous research papers present successful ECF campaigns as a variable within their study (Di Pietro & Butticè, 2020; Felipe & Ferreira, 2020; Signori & Vismara, 2017). Similar to these papers, the authors of this study categorize a successful ECF campaign as a campaign that achieved the targeted funding goal. This definition has been applied since both ECF platforms, Seedrs and Crowdcube, operate on the *all-or-nothing* approach. This means that, if a company does not achieve the funding goal, the raised amount will be returned to the crowd investors (Crowdcube, 2021; Seedrs, 2021). Consequently, the company ends up without any investment – and the campaign is therefore, not successful. Given the fact that the dataset only contains companies that have completed a successful ECF campaign and both ECF platforms operate on an *all-or-nothing* approach, the amount of received funding in the campaign is also an indicator that the campaign has been successful.

Table 5: Operationalization successful ECF campaigns

Key Concept	Variables	Indicator
Successful equity-based crowdfunding campaign	• Received funding in a ECF campaign • For cross-checking: funding goal	• Amount of received funding in campaign (USD) • For cross-checking: Amount of funding goal (USD)

3.4.2 Receiving other sources of funding before successful ECF campaign

As mentioned in section 2.2.2 of the Theoretical Framework, different sources of funding can represent a positive signal when it comes to receiving subsequent funding from a VC after an ECF campaign. In this paper, other sources of funding include BAs, grants, accelerators, and corporate investments. These preliminary sources of funding represent the variables within this key concept. Moreover, the indicator is represented by the total number of other sources of finance the company received before a successful ECF campaign. Since the dataset comprises all sources of funding a company received until ECF campaign (including the ECF), the authors of this paper calculate this number by subtracting one of the total funding. As an example: A company received in total six sources of funding until the ECF campaign (incl. the ECF). Therefore, the calculation would be 6 minus 1, and would consequently show that the company received five other funding sources before the ECF campaign. Due to the limitation of the dataset, it is not possible to determine whether this previous investment is provided by BAs,

grants, accelerator, or corporates on an individual company-level. As a result, only the total number of investments from other sources prior to the ECF campaign can be identified.

Table 6: Operationalization receiving other sources of funding

Key Concept	Variables	Indicator
Other sources of funding	• Receiving Business Angel, • Grants, • Accelerator, • or corporate investments before a successful ECF campaign	Total number of other sources before successful ECF campaign.

As outlined in section 2.2 of the Theoretical Framework, having alternative sources of finance prior a successful ECF campaign, may be a factor when it comes to increasing the likelihood of receiving subsequent VC funding. In the same manner, it is assumed that a higher amount of preliminary financing deals before carrying out an ECF campaign may attract a future investment from a VC. In this study, the authors will carry out a statistical analysis by the hand of a t-test to answer hypothesis 1: "*A higher number of other sources of funding before a successful ECF campaign increases the likelihood of obtaining subsequent VC financing"*. In order to investigate whether the statement is true, the following hypotheses are formulated:

$$H_1: \mu a > \mu b \text{ or } H_1: \mu a - \mu b > 0$$

$$H_0: \mu a - \mu b \leq 0$$

H_1 refers to hypothesis 1 and H_0 refers to the null hypothesis. Also, μa stands for population mean for the Final Sample (companies that received VC funding after a successful ECF campaign).; and μb stands for population mean for the Control Sample (companies that did not receive VC funding after a successful ECF campaign).

3.4.3 Type of company

In order to cluster the data entries into technological and non-technological companies the authors have assigned the Industry Classification Benchmark (ICB) to each company. Industry codes which related to technology were grouped as "technological", while companies that did not relate to technology were grouped as "non-technological". Similarly to the research of

Borello, De Crescenzo & Pichler (2019) technological firms refer to product innovation and not to technological process innovation. For instance, if a company is active in the financial sector but focuses on developing a new software for processing payments, it will be classified as a technological company, since the product aims to be a technological product innovation which in this case is the new software for processing payments. In contrast, if a company sells consumer goods through their online web shop, a no technological product innovation can be identified and therefore the venture will be categorized as a non-technological company. Even though the authors tried to classify the companies in the most objective way possible, the categorization was not clear in all cases. For these cases additional resources were consulted. This included the product category in which the company was listed on the equity crowdfunding platform and the information regarding their industry verticals available on Pitchbook. To conduct a statistical analysis, technological companies received the value 1 while non-technological companies received the value 0.

Table 7: Operationalization type of company

Key Concept	**Variables**	**Indicator**
Type of company	• Technological • Non-technological company that successfully raised capital through a ECF campaign	Number of technological and non-technological companies (1 = technological company, 0 = non-technological company)

As described in section 2.3 of the Theoretical Framework, the industry category in which you list an ECF campaign may have an impact not only on the success of the campaign, but also on the likelihood of receiving VC financing at a later stage. In the research field of crowdfunding there are conflicting views and empirical evidence on this matter. On the one hand, theory suggests that in the field of ECF, non-tech companies tend to have a higher success rate due to the simplicity of their product or services (Borello, De Crescenzo & Pichler, 2019). On the other hand, there is strong evidence that suggests that tech companies are more likely to obtain VC investment due to their scalability potential and patent utilization (Kaminski, Hopp & Tykvová, 2019; Thies et al., 2019). Therefore, in this section the authors aim to investigate whether the latter holds by answering hypothesis 2.

There are two variables in Table 4 that are relevant to this hypothesis. In specific variable that categorizes tech and non-tech ECF-funded companies and the fact if they received VC capital after the ECF campaign, which in this case acts as the outcome variable. Since both are categorical variables, a chi-square analysis will be conducted, along with a Cramer's V test. These two results will either confirm or deny if there is a relationship between the variables and if this eventual relationship is statistically significant. As a result, the following hypotheses are formulated:

$$H_2: p < \alpha$$

$$H_0: p > \alpha$$

H_2 refers to the hypothesis 2 and H_0 referring to the null hypothesis. At the same time, the *p* value refers to the Chi-square significance and α to the significance level alpha of 0,05.

As the first step to answer H2, each of the 994 companies included in both samples was given a label to identify which of them were tech companies (label: 1) and which were not (label: 0). The results of this labelling system and the industry composition of each sample are illustrated in Table 8.

Table 8: Number of tech and non-tech companies in the Final Sample and the Control Sample

		Variable (4): Received VC funding after ECF campaign	
		Yes	**No**
Variable (2): Technological / non-technological company (1 = technological, 0 = non-technological)	**Tech (1)**	105 83%	593 68%
	Non-tech (0)	21 17%	275 32%
	Total	**126** **100%**	**868** **100%**

The table allows for different conclusions to be drawn from it. Among all the ECF-funded firms included in both samples, 70% are tech companies, representing a total of 698 companies. Furthermore, when both variables are connected, it is evident that the tech/non-tech ratio is higher for companies that have received subsequent VC funding than for those that have not. In fact, the Final Sample contains 83% tech companies, while the Control Sample contains 68%. This makes a difference of +15%. In other words, one could argue that VCs are more prompt to invest in ECF-funded companies from the tech-sector. Although, the statistical

correlation between these two variables is still unknown. Therefore, a chi-square test should be conducted.

3.4.3.1 Chi-square Test

In order to calculate the chi-square test, it is necessary to determine the observed and the expected range of both datasets. Table 9 illustrates both ranges and the difference in values. Each value that composes the expected range has been calculated at the hand of the following equation:

Equation 1 Calculation for expected ranges in a Chi-square test

$$E_{i,j} = \frac{R_i \times C_j}{N}$$

Hereby $E_{i,j}$ refers to the expected range, R_i refers to the row total, C_j to the column total and N to the grand total.

Table 9: Chi square test data of the Final Sample and the Control Sample

		Companies that received VC funding after the ECF campaign	Companies that did not receive VC funding after the ECF campaign	**Total**
Chi Square Test Data	**Observed Range**			
	tech	105	593	698
	non-tech	21	275	296
		126	868	994
	Expected range			
	tech	88,48	609,52	
	non-tech	37,52	258,48	

3.4.3.2 Cramer's V

The following section outlines the steps taken to calculate the Cramer's V. First, the following formula needs to be calculated for each subgroup that composes the correlation between the two variables:

Equation 2 Calculation for computing the Cramer's V

$$\frac{(O_{i,j} - E_{i.j})^2}{E_{i.j}}$$

Hereby O refers to the observed values and E to the expected values. The results of this formula are illustrated in Table 10.

Table 10: First step to calculate the Cramer's V

(O-E)^2/E	Companies that received VC funding after the ECF campaign	Companies that did not receive VC funding after the ECF campaign
tech	3,08	0,45
non-tech	7,27	1,06

These results are used to calculate the Pearson Chi-square value, hereby referred to as x^2. Accordingly, the following formula is applied:

Equation 3 Calculation for the Pearson Chi-square value

$$x^2 = \sum_{ij} \frac{(O_{i,j} - E_{i.j})^2}{E_{i.j}}$$

Hereby the additional value of ∑ refers to the sum of all the data points calculated in Table 10. The result of this formula provides a Pearson Chi-square value of 11,86. In other words, x^2 =11,86. In addition the degrees of freedom (d*f*) are calculated at the hand of the following formula:

Equation 4 Calculation for the degrees of freedom

$$df = (r-1) \times (c-1)$$

Where "r" stands for number of rows and "c" stands for number of columns, both values connected to Table 10. The result of this formula gives 1 degree of freedom. In other words, d*f* = 1. As a last step, the Cramer's V, hereby referred to as V is calculated using the following formula:

Equation 5 Calculation for the Cramer's V

$$V = \sqrt{\frac{x^2}{n \times (q - 1)}}$$

Where "x^2" is the Pearson Chi-square value and "n" the total number of both samples, 994 in Table 10. Moreover, "q" is calculated by the following formula: $q = \min(r, c)$. Where "*r*" refers to the number of rows and "*c*" the number of columns. Both values referring to Table 10.

3.4.4 Funding amount ECF

The funding amount refers to the total amount raised through the ECF campaign. In hypothesis H3a the authors mentioned the potential impact of a large ECF funding amount on receiving subsequent funding from a VC. To define the term "large" the mode of the dataset for this specific variable needs to be calculated. The reasoning behind choosing the mode for is that this statistical method does not get affected by outliers in the dataset (Bill, Bryman & Harley, 2019). Subsequently, ECF campaigns that achieved a higher funding amount than the calculated mode which is $210.000 are categorized as large.

Table 11: Operationalization funding amount

Key Concept	Variables	Indicator
Funding amount	• Received funding in a ECF campaign	Amount of received funding in a ECF campaign
Large funding amount	• Received funding in a ECF campaign	Amount of received funding in a ECF campaign which is higher than the mode

3.4.5 Received VC funding amount

In the hypothesis H3a the received VC variable will act as dummy variable. Companies which received VC after their ECF campaign will be assigned with the value 1 while companies that did not manage to receive will get the value 0. In contrast, for H3b the received funding from a VC will be a quantitative variable and therefore indicate the total amount of acquired capital from a VC after a successful ECF campaign.

Table 12: Operationalization VC funding amount

Key Concept	Variables	Indicator
Received venture capital (H3a)	• Received funding in a ECF campaign	If company received VC after successful ECF campaign (1 = received VC, 0 = did not receive VC)
Received venture capital (H3b)	• Amount of received funding in a VC campaign	Amount of received VC after a successful ECF campaign

To test the hypothesis H3a the authors decided to conduct a logistic regression. The reasoning behind this is that the hypothesis *"companies that have raised a large amount of funding in a successful ECF campaign are most likely to receive subsequent financing from a VC"*, consists of two variables, a quantitative and categorical one. In this test the categorical one will act as a dummy variable. Since a logistic regression is a suitable for quantitative and binary variables, the authors use it as their statistical model (Bill, Bryman & Harley, 2019). The dataset is divided in two samples, one with a ECF funding higher $210.000 and one with a funding less or equal to $210.000.

For hypothesis H3b the authors have used a traditional ordinary least squares method for their linear regression. The hypothesis "*the higher the amount of funding a company raises in a successful ECF campaign, the higher the amount of subsequent VC funding it obtains"*, consist of two quantitative variables. Since there is only one independent and dependent variable, a linear regression has been selected as a statistical approach for this hypothesis (Bill, Bryman & Harley, 2019). To ensure additional significance an ANOVA test was conducted.

The linear regression analysis will be conducted with and without outliers to avoid potential misinterpretations.

3.5 Validity and Reliability

Easterby-Smith et al. (2021) state that the validity reflects the accuracy in which the concepts are measured. In this study, the variables are based on previous and prominent research papers

within the academic field of ECF. Consequently, the validity of this study is strengthened. In addition, the authors also corroborated the data against another online database and ECF platforms to avoid incidental errors in the dataset. That way, eventual data entry errors are recognized and subsequently adapted. Another factor that substantiates the data reliability relies on its replicability. This refers to the fact if a researcher conducts the same study, the same results should be achieved (Easterby-Smith et al., 2021). All in all, the authors believe in the reliability of their dataset, Nonetheless, the manual cleaning process of the data risks the presence of ubiquitous human errors. That said, the authors are confident that this process has been carried out with cautiones and deliberation.

3.6 Ethical Considerations

Before exporting the data, a premium account of Pitchbook was acquired. Subsequently, the authors made sure their research purpose is compliant with the terms of use of Pitchbook. In that manner, the database is not published or distributed, complying that way to Pitchbook's terms of use. Therefore, financial information relating to the variables in each sample will not be presented individually on a company-by-company basis. Hence, the results of the analysis will only be systematically displayed according to Pitchbook's terms and conditions (Pitchbook, 2021).

4 Empirical Analysis and Results

This chapter discusses the statistical analysis conducted by the hand of two datasets: the final sample and a control group. At the same time, the findings from the statistical tests are brought forward to confirm or disregard the hypotheses. Lastly, the findings of each ECF-related characteristic are compared with the existing literature outlined in chapter 2. A final reflection concludes each section in this chapter, either supporting or challenging previous research.

4.1 Descriptive Statistics

The following tables present the descriptive statistics based on the operationalization of the variables. Subsequently, both datasets have been labeled as follow:

- **Final Sample:** Companies that received VC funding after a successful ECF campaign.
- **Control Sample:** Companies that did not receive VC funding after a successful ECF campaign.
- **Total dataset:** ECF-funded companies that received subsequent VC funding after a successful ECF campaign and ECF-funded companies that did not receive subsequent VC funding after a successful ECF campaign.

4.1.1 Funding before a Successful ECF Campaign

The descriptive statistics from both samples have been retrieved and presented in Table 13. In the table we can appreciate that the modes of both samples are 0. Having no sources of finance prior to an ECF campaign is therefore the most common financing status for companies in the entire dataset. As most companies within the entire dataset had no sources of finance before the ECF campaign, equity crowdfunding can be seen as a primary mechanism for many start-ups to raise their first funding round. The finding is echoed in the report from Beauhurst (2015) that found that at least 35% of all seed-stage deals in the UK are carried out on an ECF platform. In addition, renowned authors within the field of crowdfunding such as Landstrom, Parhankangas and Mason (2019) argue that due to early-stage venture's lack of traction and financial records, start-ups fail to secure capital from traditional investors. Due to this phenomenon, equity crowdfunding is an attractive pre-seed financing alternative for start-ups in the UK, as shown in this dataset.

Moreover, the table shows that the mean of companies that received VC funding after the ECF campaign (2,17) is higher than those who did not (1,71). The mean represents the average number of financing deals companies had prior to the ECF campaign. At first glance, this finding indicates that H_1 ($\mu a - \mu b > 0$) does hold true. However, it is not yet known if this

difference is statistically significant. At the same time, when analysing the measure of dispersion, we make reference to the standard deviation (SD) (Saunders, Lewis & Thornhill, 2009). In this dataset, the SD of the companies that received VC funding after the ECF campaign is 2,52 whereas the SD of sample those who did not is 1,96. Considering the values in both datasets, we can conclude that the sample of companies that received VC funding after the ECF campaign contains a relatively higher variation in the number of preliminary sources of finance than the sample of those who did not received subsequent VC funding, making the latter more reliable.

Table 13: Descriptive statistics of the Final Sample and the Control Sample based on the number of other sources of funding received before conducting a successful ECF campaign.

Other Sources of Finance before ECF campaign		
Descriptive Statistics	Companies that received VC funding after a successful ECF campaign.	Companies that did not receive VC funding after a successful ECF campaign.
Mean	**2,17**	**1,71**
Standard Error	0,22	0,07
Median	1,00	1,00
Mode	**0,00**	**0,00**
Standard Deviation	**2,52**	**1,96**
Sample Variance	6,37	3,84
Range	13,00	15,00
Minimum	**0,00**	**0,00**
Maximum	**13,00**	**15,00**
Sum	274,00	1482,00
Count	126,00	868,00

4.1.2 Funding Amount of the ECF campaign

Table 14 shows the descriptive statistics of the total dataset of 994 companies, the Final Sample with 126 and the Control Sample with 868 companies. The mean for all three samples ranges from $830.000 to $890.000. Similar results can be seen on the median where the number varies from $400.000 to $490.000. By looking at the maximum amount of the total dataset, it can be seen that the highest ECF amount in a campaign in the whole dataset is $65.89m, while the maximum amount for companies that did receive VC funding after the ECF campaign is $9.54m. As a consequence of this outlier, the standard deviation for the total dataset ($2.31m) as well as for companies that did not receive subsequent VC funding after an ECF campaign ($2.42) was higher than the standard deviation for those companies who did ($1.27m).

Table 14: Descriptive statistics of the total dataset, the Final Sample and the Control Sample based on the final funding amount raised during the successful ECF campaign

Funding Amount of the ECF campaign			
Descriptive Statistics	Total Dataset	Companies that received VC funding after a successful ECF campaign	Companies that did not receive VC funding after a successful ECF campaign
Mean*	**0.83**	**0.89**	**0.82**
Standard Error*	0.07	0.11	0.08
Median*	0.40	0.49	0.40
Mode*	**0.21**	**0.03**	**0.23**
Standard Deviation*	**2.31**	**1.27**	**2.42**
Sample Variance*	5.32	1.61	5.85
Range*	65.88	9.53	65.88
Minimum*	**0.01**	**0.01**	**0.01**
Maximum*	**65.89**	**9.54**	**65.89**
Sum*	824.83	111.52	713.32
Count	994	126	868

**. Numbers are reported in millions of USD*

To answer hypothesis 3a the dataset was subdivided into two subgroups: On the one hand, companies that raised relatively low amounts of ECF funding and on the other hand, those that raised relatively high amounts. This division was calculated using the mode from the total dataset ($0.21m). According to Saunders, Lewis and Thornhill (2009) the mode represents the value that occurs most frequently. In this case, the mode sets a threshold to identify relatively large funding amounts in an ECF-campaign. Table 15 summarizes the descriptive statistics from both sub-groups.

The mean for companies that received less or equal to $210.000 is $120.000 while the mean for companies that received more than $210.000 in their ECF campaign is $1.11m. Companies with a funding volume in a ECF less or equal to $210.000 have a standard deviation of around $60.000, in comparison for companies that received more than $210.000 this deviation is at $2.67m. The high standard deviation can be associated to the outlier of $65.89m for the subgroup of companies that received a funding bigger than $210.000.

Table 15: Descriptive statistics of companies that received a relatively high amount of ECF funding and companies that received a relatively low amount of ECF funding in terms of ECF funding amount.

Descriptive Statistics	Funding amount ≤ $210.000	Funding amount > $210.000
Mean*	**0.12**	**1.11**
Standard Error*	0.00	0.10
Median*	0.13	0.67
Mode*	**0.21**	**0.23**
Standard Deviation*	**0.06**	**2.67**
Sample Variance*	0.00	7.15
Range*	0.20	65.67
Minimum*	**0.01**	**0.22**
Maximum*	**0.21**	**65.89**
Sum*	34.73	790.10
Count	282	712

**. Numbers are reported in millions of USD*

4.1.3 Funding Amount of the subsequent VC funding

Table 16 represents the subsequent VC funding amount that companies received after conducting a successful ECF campaign. Thus, the numbers presented are based on the 126 companies that comprise the Final Sample. In addition, the outliers in the data have been identified. They are data values that differ abnormally from other data within the sample (Saunders, Lewis & Thornhill, 2009). The outliers consisted of a $91.5m and $70m VC funding. Subsequently, an additional column excluding these outliers is presented to avoid misleading interpretations. By excluding the two outliers, the mean for the amount of VC funding after the successful ECF campaign is at $3.54m, whereas when including them, the mean is around $4.76m. Additionally, the removal decreased the standard deviation from $10.79m to $4.65m which is a decrease of 56.57%. The highest VC funding amount without outliers is at $24.93m, including them would result in a maximum value of $91.15m.

Table 16: Descriptive statistics of the 126 ECF-funded companies that received subsequent VC financing in terms of VC funding amount

Descriptive Statistics	Amount of VC funding (incl. outliers)	Amount of VC funding (excl. outliers)
Mean*	**4.76**	**3.54**
Standard Error*	0.96	0.42
Median*	1.70	1.64
Mode*	**0.09**	**0.09**
Standard Deviation*	**10.79**	**4.65**
Sample Variance*	116.51	21.58
Range*	91.13	24.91
Minimum*	**0.02**	**0.02**
Maximum*	**91.15**	**24.93**
Sum*	599.69	438.51
Count	126	124

**. Numbers are reported in millions of USD*

4.2 Empirical Analysis

4.2.1 The Impact of Preliminary Financing from Other Sources

As described in section 4.1.1 the mean of the sample of companies that received VC funding after an ECF campaign (2,17) is different than the mean of companies that did not (1,71). To investigate and understand further the difference in means and the distribution of the central tendency (SD), the -1sigma (-1σ) and 1sigma (1σ) for both datasets have been calculated. These are part of the Six Sigma, which represents the number of standard deviations from the mean to the closest specification limit, -1σ and 1σ being the closest. Table 17 summarizes the findings of both samples followed by a more detailed representation in Figure 3 and Figure 4.

Table 17: Distribution of the central tendency of the Final Sample and Control Sample based on the number of other sources of finance received prior the ECF campaign

Descriptive Statistics	Companies that received VC funding after a successful ECF campaign	Companies that did not receive VC funding after a successful ECF campaign
Mean	**2,17**	**1,71**
Norm. Distribution	0,16	0,20
St. Deviation (SD)	**2,52**	**1,96**
-1sigma (-1σ)	**-0,35**	**-0,25**
Norm. Distribution	0,10	0,12
1sigma (1σ)	**4,70**	**3,67**
Norm. Distribution	0,10	0,12

Figure 3: Final Sample - Distribution of the central tendency based on the mean of the number of sources of finance prior to a successful ECF campaign.

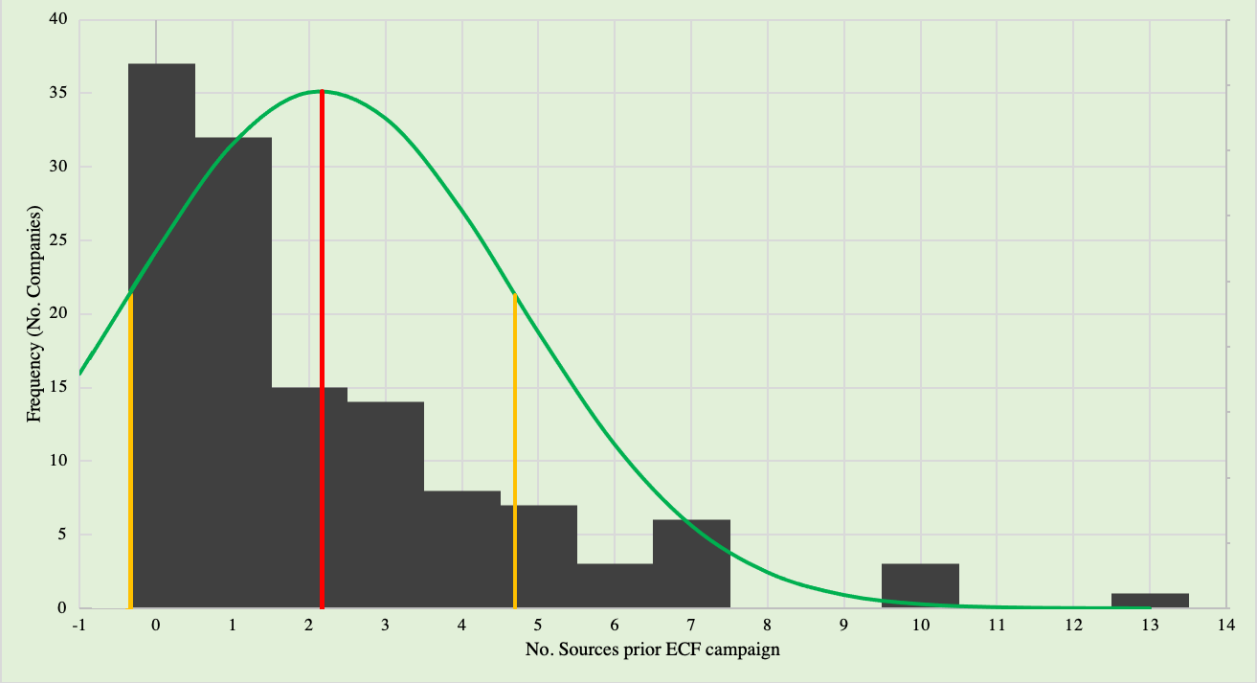
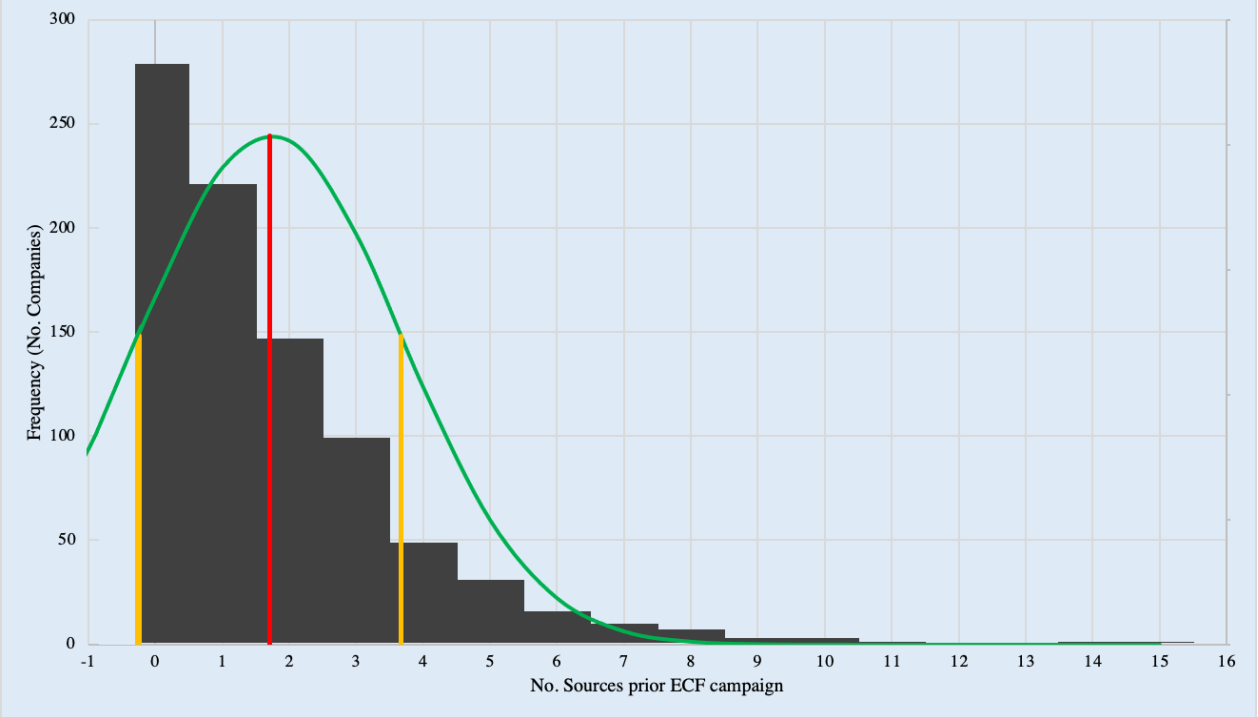


Figure 4: Control Sample - Distribution of the central tendency based on the mean of the number of sources of finance prior to a successful ECF campaign



Histograms illustrating the frequency distribution is one part of these two figures. The other part are the normal distribution charts, hereafter referred to as the bell curves. In each bell curve, the mean is represented as a red line, while the -1σ and 1σ values are indicated in yellow.

Both histograms present equal width class intervals, which makes it easy to determine the frequency distributions. Regarding the bell curves, both present a right-sided long tail, making them right-skewed density curves with asymmetrical data (Saunders, Lewis & Thornhill, 2009). The two figures suggest the number of preliminary sources of finance are more evenly distributed in the sample of companies that received VC funding after the ECF campaign, just as the difference in SDs indicates (2,17 > 1,71). Therefore, companies that receive VC funding after an ECF campaign differ more in terms of the number of sources of financing they had prior to the successful campaign. As a matter of fact, 68,3% of these companies had between 0 and 4,7 preliminary sources of finance. Comparatively, the same fraction of companies that failed to secure VC financing were more likely to have had between 0 to 3,6 preliminary funding sources. All in all, it is crucial to determine how statistically significant this difference in means and distribution is. Consequently, an independent t-test with unequal variances has been conducted. The results are illustrated in Table 18. It is also important to note that the data resembles a Poisson process, with a mean and a standard deviation that are very similar. Therefore, any results of a t-test based on the assumption of normal distribution must be carefully assessed (Saunders, Lewis & Thornhill, 2009). In addition, and to the best of our knowledge, there is no alternative test that would be reliable to determine the similarity of means.

Table 18: t-test based on the mean of the No. of sources of finance prior an ECF campaign from the Final Sample and the Control Sample

***t-*test**	
df	148
t Stat	**1,99**
P(T<=t) one-tail	**0,02**
t Critical one-tail	**1,66**
P(T<=t) two-tail	0,05
t Critical two-tail	1,98

Due to the one-tailed nature of this test, the one-tail critical value of 1,66 is brought forward. At the same time, since this is a right-tailed test, we reject the null hypothesis if the t statistic is greater than 1,66 (t > 1,66). The test statistic is t = 1,99. This means that it is in fact greater than 1,66 (1,99 > 1,66). Thus, H_0 gets rejected. Furthermore, the results of the t-test show a p-value of 0,02 (p = 0,02). Since 0,02 < 0,05 and p < 0,05 shows a statistically significant relationship, we accept H_1 (μa - μb > 0). These findings confirm that there is a statistically

significant relationship between the difference in means of the sample of companies that received VC funding after a successful ECF campaign and those who did not.

It is important to point out that no further t-tests are carried out to corroborate the relation between the predictor (no. of sources of finance prior the ECF campaign) and the outcome variable (receiving subsequent VC funding thereafter). This is because the relationship is already embedded in the t-test. The companies had already been categorized into those that received subsequent VC funding (Final Sample) and those that did not (Control Sample).

To conclude, the fact that the mean of the Final Sample (2,17) – the mean of the Control Sample (1,71) > 0 indicates that companies that secure slightly more alternative sources of finance before conducting a successful ECF campaign are more likely to secure subsequent VC funding. As a result, companies in the early stages are strongly encouraged to seek other sources of financing before entering the ECF ecosystem.

Interestingly, this finding supports the theory, where it is argued that having other sources of financing prior to the ECF campaign is a better signaling mechanism for VCs than just relying on ECF alone. The results of this hypothesis require reference to two important points. On the one hand, it has been suggested that crowd investments lack financial reliability because they are based on individual experience, passions, and geographical proximity (Di Pietro, Prencipe & Majchrzak, 2018; Keongtae Kim & Viswanathan, 2019; Pietro, Bogers & Prencipe, 2021; Shafi, 2021; Wallmeroth, 2019). Other authors also suggest that ECF investors do not conduct an adequate financial analysis prior to their investments (Block et al., 2018b; Grilli, 2019; Marek Zinecker et al., 2021). On the other hand, having other sources of funding may improve the chances of attracting future investment from a venture capital firm. According to section 2.2.2 of the Theoretical Framework, regardless of the additional advantages that ECF can bring to an entrepreneurial endeavor, including product co-creation and public awareness, it still lacks a fundamental quality in early-stage ventures: legitimacy (Di Pietro, Prencipe & Majchrzak, 2018). This is possibly one of the reasons why the mean of the sample of companies that received VC funding after an ECF campaign is moderately higher than those who did not. From these findings, one can conclude that while VCs understand the advantages of ECF for companies, they still maintain standards of legitimacy reputation when investing, a benefit that is only provided by traditional sources of capital (see Figure 1 in section 2.2.2).

Finally, as a result of the relatively low variation of the SD of the Control Sample (μb = 1,71) and so its higher reliability, the authors conclude that rather than aiming for a specific number

of preliminary sources of finance, companies seeking for follow-up VC financing should have at least two additional funding (1,71 ≈ 2) sources before launching an ECF campaign.

4.2.2 The Impact of ECF Campaign Industry Categorization

4.2.2.1 Chi-square Test

The following section outlines the results of the Chi-square test performed to answer H2: *Successfully ECF-funded companies in the technological sector are more likely to obtain subsequent financing from a VC than companies in the non-technological sector.*

The chi-square test is operationalized by using the 'CHISQ.TEST' function on Excel and by the hand of the actual and expected range illustrated in Table 9 in section 3.4.3.1. The calculation on Excel yielded a significant (p) value of 0,000572547. For reporting purposes, this p value is computed as follow: $p = 0{,}0057$. This indicates that $p < \alpha$, which accepts H_2 and rejects H_0. Therefore, there is at least a 95% certainty that the +15% difference between the percentages of tech firms that compose the Final Sample (83%) and the lower percentage of tech firms that compose the Control Sample (68%) could not have occurred by chance alone (See Table 9 in section 3.4.3.1) (Saunders, Lewis & Thornhill, 2009). In fact, a concrete correlation exists between having an ECF-funded tech company and having a higher likelihood of attracting further VC financing.

This finding is particularly interesting as there has been a lack of research in the ECF field regarding the role the industry play when it comes to obtaining subsequent financing. Referring to section 2.3.1 of the Theoretical Framework, one could suggest that the result of this hypothesis mirrors what is known in this regard concerning RCF. Researchers Kaminski, Hopp and Tykvovaa (2019) found that VCs prefer investing in RCFs that offer technology-related products. Likewise, this seems to be the case within ECF as well. It is worth mentioning that, although the exact reasons cannot be derived from this quantitative research, field's experts focus on two factors: the difficulty of recreation from a tech product and the high funding requirement to enter the market (Rossi et al., 2020; Thies et al., 2019). Finally, as already mentioned in section 2.3.2 of the Theoretical Framework, micro-investors are most likely to invest in non-tech companies (Borello, De Crescenzo & Pichler, 2019). Thus, the result of the chi-square test shows that the investment behaviour of VCs is essentially different from that of investors on ECF. This is consistent with the theoretical model of De Clercq et al. (2006) where it is stated that these two parties have contrasting investors profiles.

4.2.2.2 Cramer's V

Although there is evidence that there is a correlation between the industry in which an ECF-funded company operates and the likelihood of receiving VC financing at a later stage, it is still important to understand how strong this relationship is. For this reason, a Cramer's V is performed based on the data derived from the equations presented in section 3.4.3.2.

As a result, the Cramer's V significance value is of 0,109246453. For reporting purposes, this value is reported as follow: V = 0,10. According to Saunders, Lewis and Thornhill (2009), having a d*f* = 1 and a V ≈ 0,10 means that the predictor variable has a small effect on the outcome variable. In other words, although there is an association between the industry the ECF-funded company operates in and the likelihood of receiving subsequent VC financing after the campaign, this association is statistically weak.

A possible explanation for this additional finding may lie in the fact that an important element is missing from the hypothesis and that is the presence of patents in tech-orientated companies. After all, there is evidence that in the field of crowdfunding, tech-ventures do seem to have higher changes of obtaining subsequent financing only if patents are granted, as outlined in section 2.3.1 of the Theoretical Framework (Roma, Messeni Petruzzelli & Perrone, 2017b; Rossi et al., 2020). However, there are opposite views backed up by research that argue that, within ECF, patents do not seem to play a role on receiving subsequent funding (Hornuf, Schmitt & Stenzhorn, 2018). In order to understand why this relationship is relatively weak, further research is required. Future studies could explore whether, in the case of tech-companies specifically, patents play a role or examine what other factors could explain the weak correlation.

4.2.3 The Impact of the raised ECF Funding Amount

4.2.3.1 Hypothesis 3a

For hypothesis H3a a logistic regression by using the XLMiner Analysis ToolPak in Excel was conducted. To control the significance of the outcomes the authors used the α = 0.05. The results of the analysis of the sample which had a funding less or equal to $210.000 did not show a correlation due to the negative coefficient. That said, the p-value for the ECF amount is 0,12 (*p*-value > α). This does not mean that there is no correlation between the acquired amount in a ECF campaign and receiving subsequent VC after this campaign. Therefore, the results of the null hypothesis which states there is no relationship between the ECF amount and receiving

subsequently VC funding are not significant. Table 19 presents the results of the logistics regression for companies that received ECF funding equal or lower than $210.000.

Table 19: H3a - logistic regression for ECF amount ≤ $210.000

Regression Statistics For Funding Amount ≤ $210.000	
Chi Square*	2,35
Residual Dev.*	205,22
# of iterations	5
Observations	282

	Coefficients*	**Standard Error***	**P-value**	**Odd Ratio**	**Lower 95%***	**Upper 95%***	**Lower 95%***	**Upper 95%***
Intercept	-1,47	0,36	0,00	0,22	0,12	0,46	0,12	0,46
ECF Funding amount	-4,36	2,84	0,13	0,02	0,00	3,32	0,00	3,32

**Numbers are reported in millions of USD*

Table 20 shows the logistic regression for ECF companies that achieved more than $210.000 in their campaign. This dataset also contains one outlier of one company that managed to acquire a VC funding of $65.89 million. According to the results there is a slight correlation between the ECF amount and VC funding, but this result is not significant due to the high p-value of 0,81 (p-value > α). The authors assume that this high p-value is due to the outlier and thus decided to run an additional analysis without the outlier of $65.89 million in VC funding.

Table 20: H3a - logistic regression for ECF amount > $210.000 (with outlier)

Regression Statistics for funding amount > $210.000	
Chi Square*	0,05
Residual Dev.*	548,03
# of iterations	5
Observations	712

	Coefficients*	Standard Error*	P-value	Odd Ratio	Lower 95%*	Upper 95%*	Lower 95%*	Upper 95%*
Intercept	-1,92	0,12	0,00	0,15	0,12	0,18	0,12	0,18
ECF Funding amount	0,01	0,04	0,81	1,01	0,94	1,08	0,94	1,08

**Numbers are reported in millions of USD*

Table 21 presents the outcomes of the logistic regression for companies that had a higher funding amount than $210.000. However, the outlier that managed to get a $65.89 million VC investment is excluded. As expected, the results indicated a stronger correlation. Nonetheless, the result is not significant since p-value is equal to 0,16 (p-value > α).

Table 21: H3a - logistic regression for funding amount > $210.000 (without outlier)

Regression Statistics for funding amount > $ 210.000 (Without outlier)	
Chi Square*	1,81
Residual Dev.*	545,99
# of iterations	5
Observations	711

	Coefficients*	Standard Error*	P-value	Odd Ratio	Lower 95%*	Upper 95%*	Lower 95%*	Upper 95%*
Intercept	-2,04	0,15	0,00	0,13	0,10	0,17	0,10	0,17
ECF Funding amount	0,12	0,09	0,16	1,13	0,95	1,34	0,95	1,34

**Numbers are reported in millions of USD*

Previous research in the RCF funding sector (Roma, Messeni Petruzzelli & Perrone, 2017a; Thies et al., 2019) show a positive correlation between the acquired capital in a RCF campaign and receiving venture capital. Nonetheless, no significant correlation between the acquired amount in a successful ECF campaign and the probability of receiving VC is found in this study. The reasonings behind not achieving a significant result could be that VC signal successful RCF and ECF campaigns differently. However, the authors are not aware of any research that has done a comparison of the signaling theory of VC for a successful ECF and RCF campaign. Another potential factor why no correlation is found could rely on the relatively

small sample size of 994 companies compared to similar studies. For instance, Thies et al. (2019) have a total dataset of 56.000 RCF campaigns in their study, which also could increase the probability of identifying a correlation due to a larger dataset.

4.2.3.2 Hypothesis 3b

For H3b a linear regression analysis by the Excel Analysis Tool was conducted. Table 22 shows the results of the linear regressions including the two outliers of a $91.5m and $70m VC funding. Only a small correlation can be found by examining both Multiple R and R square. However, due the p-value of 0,148 (*p*-value > α) the result is not significant. Additionally, the high F-Value in the ANOVA test shows that the linear regression is not an appropriate model. But since the two outliers have a combined funding volume of around $161.5m which is around 27% of the total funding volume of VC investments in the dataset the authors decided to run the test again but excluding the outliers.

Table 22: H3b - linear regression with outliers

Regression Statistics with outlier	
Multiple R	0,13
R Square	0,02
Adjusted R Square	0,01
Standard Error*	10,75
Observations	126,00

ANOVA

	df	**SS**	**MS**	**F**	**Significance F**
Regression	1	244,79	244,79	2,12	0,15
Residual	124	14318,84	115,47		
Total	125	14563,63			

	Coefficients*	**Standard Error***	**t Stat***	**P-value**	**Lower 95%***	**Upper 95%***	**Lower 95.0%***	**Upper 95.0%***
Intercept	3,78	1,17	3,24	0,00	1,47	6,10	1,47	6,10
Equity Crowdfunding	1,10	0,76	1,46	0,15	-0,40	2,60	-0,40	2,60

**Numbers are reported in millions of USD*

The following table presents the results of the linear regression without the outliers. In comparison to the previous results the multiple R increased from 0,129 to 0,341. Furthermore, R Square advances from 0,017 to 0,116. According to Cohen (1988) and Falk & Miller (1992) a R Square bigger than 0,10 indicates a slight or moderate correlation between the funding

amount of an ECF campaign and the subsequent funding amount of a VC. Additionally, these results get supported by a p-value of 0,0001 (*p*-value < α) and therefore indicate a high significance. Hence, the null hypothesis which states that there is no correlation between the ECF amount, and the amount of VC can be rejected.

Table 23: H3b - linear regression without outliers

Regression Statistics with outlier	
Multiple R	0,34
R Square	0,12
Adjusted R Square	0,11
Standard Error*	4,38
Observations	124,00

ANOVA

	df	**SS**	**MS**	**F**	**Significance F**
Regression	1	308,84	308,84	16,06	0,0001
Residual	122	2345,73	19,23		
Total	123	2654,56			

	Coefficients*	**Standard Error***	**t Stat***	**P-value**	**Lower 95%***	**Upper 95%***	**Lower 95.0%***	**Upper 95.0%***
Intercept	2,44	0,48	5,07	0,00	1,49	3,39	1,49	3,39
Equity Crowdfunding	1,24	0,31	4,01	0,00	0,63	1,85	0,63	1,85

**Numbers are reported in millions of USD*

Overall, a slight correlation between the variables amounts of raised capital in a ECF campaign and subsequent VC is found (excluding the outliers). Echoing the findings from Thies et al. (2019), the authors of this paper believe that a higher funded ECF campaign could indicate a higher market demand for the company. In this context a higher market demand could lead to a higher funding amount in an ECF-campaign and subsequently in the VC funding round. Equal results are also found in the article of Mollick and Nanda (2015) where a higher number of backers in a RCF campaign could be seen as a stronger signal for product quality and therefore increase the amount of raised capital from a VC. Additionally, the idea of reverse herding could be applicable, since research of Zaggl and Block (2019) has shown smaller amounts of investments in RCF campaigns could lead to lower follow-up funding. In this case ECF campaigns with less funding could thus be associated with less VC investments.

4.3 Hypotheses Correlation Matrix

The following table summarizes the statistical analyses conducted in this chapter. The purpose of this overview is to determine which of the variables are significantly associated with the likelihood of obtaining VC funding after a successful ECF campaign.

Table 24: Hypotheses Correlation Matrix

	Correlations				
	Variables (Title, #, Statistical Analysis)			Received subsequent VC funding after ECF campaign (#4)	Amount of received VC funding after ECF campaign (#5)
H_1	Number of other sources of funding before ECF campaign	#1	*t*-test Sig. (1-tailed)	p = 0,02*	n/a
H_2	Technological / non-technological	#2	Chi-square test Cramer's V	p = 0,00* V = 0,10***	n/a
H_{3a}	Funding amount in ECF campaign	#3	Logistic Regression (Funding amount ≤ $210.000)	p = 0.12**	n/a
			Logistic Regression (Funding amount > $210.000)	p = 0.81**	n/a
			Logistic Regression (Funding amount > $210.000 - outlier)	p = 0.16**	n/a
H_{3b}			Linear Regression	n/a	p = 0,14**
			Linear Regression	n/a	p = 0.00*

* Correlation is significant at the α = 0,05 level, where $p < \alpha$

** Correlation is not significant at the α = 0,05 level, where $p > \alpha$

*** Weak correlation based on a df = 1

5 Discussion

In this chapter, the authors explain how this study contributes to the existing literature, while justifying why, in some cases, the results also challenge previous research. In addition, the study's limitations are discussed, along with suggestions for further research.

5.1 Implications

The authors' chose to conduct this study based on data in the UK because it is an area where crowd investing already gained a lot of traction. This will enable future comparisons with data from emerging countries in the ECF field. In addition, most of the hypotheses in this paper were derived from prior research in the area of crowdfunding, specifically RCF. Therefore, one of the main contributions of this paper has been to determine in which cases the theory of RCF also applies to ECF. In the same way, this paper breaks free from conventional guidelines for conducting successful ECF campaigns. Instead, it helps ECF-funded companies reach long-term sustainability by providing suggestions on how to obtain funding from VCs.

From this study it appears that RCF can, to some extent, also be applied to ECF. As an example, the authors confirmed that while the association was weak, there is a positive relationship between being an ECF-funded tech company and receiving VC funding. At the same time, there is a correlation between the amount raised by ECF campaigns and the amount of subsequent funding received from a VC. Both of these results are in accordance with RCF theory (Kaminski, Hopp & Tykvová, 2019). In contrast, H3a's findings challenge those of RCF (Mollick & Nanda, 2016; Thies et al., 2019). Wherein RCF finds the potential of securing follow-up funding is greater when the amount raised during the campaign is higher, H3a finds no significant correlation. Compared to general entrepreneurial finance, this study supports the theory. For example, by accepting H1, the authors reaffirm the importance of having other sources of funding when looking for VC investments, even after a successful ECF campaign (Block et al., 2018b; Delmar & Shane, 2004; Pietro, Bogers & Prencipe, 2021).

5.2 Limitations

Similar to other empirical studies, the data sample used in this paper has limitations. As described in section 3.2.2 of the Research Methodology, a manual cleaning process was undertaken to operationalize the final and control samples (See Table 2 in section 3.2.2). Even

though this was done meticulously, it may account for human error in collecting data and question the degree of objectivity. Moreover, the sample size is relatively small compared to previous studies outlined in the Theoretical Framework. The authors believe that this particular limitation might have affected the results of hypothesis 3a and 3b. In fact, a higher amount of data would have led to a higher funding range. As a result, one may also be able to detect a higher or clearer connection between the ECF funding amount and likelihood of receiving subsequent VC financing.

We also encountered some limitations with our primary data source. In order to answer H1, the authors used Pitchbook to find out how many financing deals the companies had before the ECF campaign. Unfortunately, the platform did not specify the type of financing on a company level (BAs, Accelerators, grants, or corporate). Although this did not prevent us from answering H1, it made it difficult to look at the data from a granular perspective and analyse how each source influences the likelihood of receiving subsequent VC funding.

Lastly, the authors of this thesis incorporated an independent industry categorization of ECF funded companies into section 3.4.3 of the Research Methodology. Despite relying on official classification techniques for the method of division, it still accounted for manual work. Because of this, the tech and non-tech industry classification could be regarded as slightly subjective.

5.3 Further Research

Further investigation from different angles can be conducted considering this study. First, we suggest examining further the hypotheses that were presented in this paper. For instance, it would be useful to know if as mentioned in section 4.2.2 of the Empirical Analysis, presenting patents during the ECF campaign would potentially increase the likelihood of receiving VC funding for tech-companies specifically. Also, in addition to measuring the impact of having other sources of funding prior to the ECF campaign, when it comes to attracting further VC investment, it is suggested to compare these statistical results to the impact that they might have after the ECF campaign. Moreover, the authors suggest comparing the results of this paper with a study on companies that managed to secure VC financing after the unsuccessful campaign.

Finally, the authors suggest further studies on what happens after following a successful ECF campaign in terms of subsequent funding rounds. For instance, exploring the likelihood of receiving follow-up capital from other financing sources such as BAs or CVCs.

6 Conclusion

The purpose of this study has been to explore the patterns of characteristics that successfully ECF-funded companies have in common when it comes to receiving subsequent VC funding. Previous research within the field of the post-outcomes of successful ECF campaigns has been very limited until now. Therefore, the authors of this study collected and evaluated a total dataset of 994 ECF companies which had a successful campaign between fiscal years 2015 and 2020 in the UK. Out of these 994 companies 126 successfully acquired VC after their ECF campaign. The data has been gathered through a database for private and public companies and was cross-checked with another similar database and the ECF platforms where the ECF campaigns were listed.

From the literature review the authors identified three variables which have not been researched in previous publications: The number of other sources of funding the successfully ECF funded company received before the campaign, if the venture is a technological or non-technological company and how much capital they raised in their ECF campaign. Afterwards, the authors conducted statistical analyses to determine the impact of these variables on subsequent funding from VC.

Firstly, the results show that companies that have a slightly higher number of other sources of funding have had a higher likelihood of receiving VC capital after their ECF campaign. These findings are aligned with previous literature in the signalling theory for equity crowdfunded companies, which showed that ECF could be a positive signal for post funding events (Ahlers et al., 2015; Butticè, Di Pietro & Tenca, 2020; Kleinert, Volkmann & Grünhagen, 2020; Signori & Vismara, 2017). Additionally, since most private crowd investors do not have a thorough financial evaluation process and mostly invest based on their own experience (Cumming, Johan & Zhang, 2018; Grilli, 2019; Marek Zinecker et al., 2021), having more sources of funding besides ECF can increase the legitimacy of a company from the perspective of a VC. Consequently, having more sources of funding before a ECF campaign can be seen as one characteristic for securing VC.

Secondly, the authors analysed the impact the company type (technological or non-technological) has on receiving VC. Although the association is relatively weak, the results indicate that technological ventures are still more likely to receive VC after their ECF campaign compared to non-technological ventures. Potential reasonings behind this could be that technological products are harder to recreate and would require more capital to enter new

markets (Rossi et al., 2020; Thies et al., 2019). Furthermore, historic data of big technology companies present a high scalability of their product and could therefore be seen as more attractive to VC investors (Chemmanur, Loutskina & Tian, 2014). Hence, having a technological product is the characteristic number two for acquiring VC.

Thirdly, the authors researched the impact the high funding amount in an ECF campaign could have on receiving subsequent VC capital. Regarding this potential characteristic, no significant results were found that proof a high ECF amount increases the probability of attracting subsequent VC funding. The authors believe that conducting the same test with a bigger testing sample could give more opportunities to achieve significant results for specific ECF funding ranges. Nonetheless, the authors identified a slight correlation between the funding amount in a ECF campaign and its impact on the total raised VC capital. Similar to previous research within the field of RCF a higher amount of acquired capital in a ECF campaign could indicate a higher market demand for a VC and therefore would lead to a higher subsequent funding (Mollick & Nanda, 2016; Thies et al., 2019).

According to the findings, successful ECF-funded companies that obtained VC share two characteristics: They had more sources of funding before an ECF campaign and were operating within the technological industry. Based on these results companies that aim to get a VC funding after their ECF campaign should get more sources of funding and operate in the technological sector to increase the probability of a subsequent VC investment. Research in future might focus on the consequences of receiving other sources of funding after the ECF campaign and whether technological companies have a higher likelihood of securing VC funding if they list their patents within their campaign.

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