
From Education to Exploitation – New Insights to promote successful Entrepreneurial Activities



TECHNISCHE
UNIVERSITÄT
DARMSTADT

Vom Fachbereich Rechts- und Wirtschaftswissenschaften
der Technischen Universität Darmstadt

zu Erlangung des akademischen Grades
Doctor rerum politicarum (Dr. rer. pol.)
genehmigte

Dissertation

von

Daniel Andre Dilmetz, M.Sc.

geboren am 04.08.1986 in Darmstadt

Erstgutachterin: Prof. Dr. Carolin Bock

Zweitgutachter: Prof. Dr. Alexander Kock

Darmstadt, 2022

Dilmetz, Daniel Andre: *From Education to Exploitation – New Insights to promote successful Entrepreneurial Activities*

Darmstadt, Technische Universität Darmstadt,

Jahr der Veröffentlichung der Dissertation auf TUprints: 2022

URN: urn:nbn:de:tuda-tuprints:218479

Tag der mündlichen Prüfung: 07.07.2022

Veröffentlicht unter CC BY-SA 4.0 International

<https://creativecommons.org/licenses/>

“Now you can either accept that, or you can get to work.

That’s all it is. You just begin.

You do the math.

You solve one problem...then you solve the next one. And then the next.

And if you solve enough problems, you get to come home.”

Mark Watney in the motion picture “The Martian”

(Portrayed by Matt Damon – based on the novel by Andy Weir)

Abstract

This dissertation aims to answer current research questions related to entrepreneurship. Since the works of Joseph Schumpeter (1883 - 1950), who attributed the development of capitalism to entrepreneurship, it has been one of the most important factors influencing technological progress and the growth of economic structures. The motives of a person to become an entrepreneur are complex. While some founders actively pursue the goal of realizing themselves and being able to act autonomously, others discover an opportunity and develop an entrepreneurial initiative from this discovery, which ultimately results in their entrepreneurial action. Also, the change of circumstances, the environment, or other regularities can an individual to recognize an entrepreneurial opportunity. Ourselves have been experiencing such a change since the year 2020 when the Covid-19 pandemic changed our lives to an extent unimagined at that time. As a result, new problems of everyday life also arose, which were not infrequently addressed by innovations from start-up companies to ensure the safety of society in these times and still allow normal life to continue. Two years later, taking advantage of the technologies that have emerged, we have adapted. We now carry our vaccination records digitally at all times, use apps on our smartphones to track our whereabouts, and traditional meetings in our workday are replaced by digital meetings using apps like Zoom or Teams. Society is evolving and using the products and services of innovative young companies to counter the "new now" and move on with life.

In line with the high relevance of entrepreneurship for economic and social development and the advance of technological progress, research in this field has also expanded rapidly in recent decades, encompassing a considerable number of sub-fields. However, two questions, in particular, preoccupy this field of research: The origin of entrepreneurs and how they differ from other individuals, and the question of how entrepreneurs can exercise sustainable successful entrepreneurship. Concerning the origin of the entrepreneur, the question of whether founders are born or if the skills needed for successful entrepreneurship can be learned has prevailed almost since the beginning of research in the field of entrepreneurship. In the context of this question, educational institutions such as universities are the focus of research endeavors. Concerning the sustainable success of an enterprise, the acquisition of the necessary resources is crucial.

In particular, securing financial resources is the most important challenge for the entrepreneur. From these two points of view, two of the largest scopes of research in the field of entrepreneurship have developed over the past decades: entrepreneurial education and entrepreneurial finance. This dissertation consists of a total of three studies that provide new insights in both areas and thus make a significant contribution to current entrepreneurial research.

The first study focuses on the field of entrepreneurial education and investigates how the university ecosystem can influence students' innovation skills. Based on a survey of over 300 students before and after their first year within the university, we demonstrate in this study that individual elements of the university ecosystem can indeed have a positive impact on students' entrepreneurial development. Thus, this study also indicates through empirical findings that individuals can indeed learn the skills for successful entrepreneurial actions, thereby underscoring universities' role and relevance in this endeavor.

The second and third studies deal respectively with the field of entrepreneurial financing, referring to a still rather young phenomenon in this field: crowdfunding as an alternative to traditional financing options such as venture capital financing. The second study examines how the use of words associated with creativity in the presentation of a crowdfunding campaign can affect its likelihood of success. This study is based on a dataset of more than 39,000 crowdfunding projects conducted between 2009 and 2019. The results of the study indicate that the use of words associated with creativity, when used to describe the campaign, has significant potential to increase the campaign's likelihood of success. This study thus makes a further contribution in terms of identifying signals for reducing information asymmetries between founders and investors. The third study then examines how project initiators can and should inform their supporters about the current status of the campaign. Using a dataset of 909 crowdfunding projects, this study investigates which topics have a particularly high potential to convince potential supporters of the quality of the project and, as a result, to make a financial contribution to the project through this information tool ("updates").

Each study discussed in this dissertation will be conducted with the help of empirical methods. The empirical methodology is explained in detail in each underlying chapter.

Likewise, each underlying chapter of a study first deals with an overview of the current state of research and the derivation of the hypotheses related to the respective study. Subsequently, the empirical results of each study are presented and discussed in detail. The final section of this dissertation summarizes the theoretical and practical contribution of the results obtained.

Zusammenfassung

Die vorliegende Dissertation hat zum Ziel, aktuelle Fragestellungen der Forschung bezogen auf das Unternehmertum zu beantworten. Spätestens seit den Werken von Joseph Schumpeter (1883 – 1950), der die Entwicklung des Kapitalismus auf das Unternehmertum zurückführte, steht das es als einer der wichtigsten Einflussfaktoren für den technologischen Fortschritt und das Wachstum ökonomischer Strukturen. Die Beweggründe eines Menschen unternehmerisch tätig zu werden sind vielschichtig. Während manche Gründer aktiv das Ziel verfolgen sich selbst zu verwirklichen und autonom agieren zu können entdecken andere Menschen eine Gelegenheit und entwickeln aus dieser Entdeckung heraus eine unternehmerische Initiative, die schlussendlich in ihrer unternehmerischen Handlung resultiert. Auch die Veränderung von Umständen, der Umwelt oder anderen Gesetzmäßigkeiten kann dazu führen, dass Individuen hieraus eine unternehmerische Gelegenheit erkennen und diese abschöpfen. Eine solche Veränderung erleben wir seit dem Jahr 2020, in dem die Covid-19 Pandemie unser Leben in einem zu diesem Zeitpunkt ungeahnten Ausmaß nachhaltig veränderte. Infolgedessen entstanden ebenfalls neue Probleme des alltäglichen Lebens, die nicht selten durch Innovationen von Start-up Unternehmen adressiert wurden, um die Sicherheit der Gesellschaft in diesen Zeiten zu gewährleisten und das normale Leben dennoch weiter zu ermöglichen. Zwei Jahre später haben wir uns, die hervorgebrachten Technologien nutzend, angepasst. Wir tragen unseren Impfnachweis nun ständig digital mit uns, verwenden Apps auf unserem Smartphone um unsere Aufenthalte nachzuverfolgen und klassische Meetings in unserem Arbeitsalltag werden durch digitale Meetings in Zoom oder Teams ersetzt. Die Gesellschaft entwickelt sich weiter und nutzt die Produkte und Dienstleistungen innovativer, junger Unternehmen, um dem neuen „Jetzt“ zu entgegen und das Leben weiterzuführen.

Mit der hohen Relevanz des Unternehmertums für die wirtschaftliche und gesellschaftliche Entwicklung und das Voranschreiten des technischen Fortschrittes einhergehend hat sich auch die Forschung auf diesem Gebiet in den vergangenen Jahrzehnten rasant ausgebreitet und umfasst eine beträchtliche Anzahl von Teilgebieten. Zwei Fragen beschäftigen dieses Forschungsfeld aber insbesondere: Die Herkunft der Unternehmer

und wie diese sich von anderen Individuen unterscheiden, sowie die Frage, wie Unternehmer eine nachhaltig erfolgreiche Ausübung ihrer unternehmerischen Initiative ausüben können. Bezogen auf die Herkunft des Unternehmers herrscht nahezu seit Anbeginn der Forschung auf dem Gebiet des Unternehmertums die Frage, ob Gründer „geboren“ werden oder ob sich die für eine erfolgreiche Ausübung unternehmerischer Tätigkeiten benötigten Fähigkeiten erlernt werden können. Im Rahmen dieser Frage stehen Bildungsinstitutionen wie Universitäten im Fokus der Forschungsunterfangen. Hinsichtlich des nachhaltigen Erfolges einer Unternehmung ist die Akquisition der dafür benötigten Ressourcen entscheidend. Hierbei stellt insbesondere die Sicherstellung finanzieller Ressourcen für den Unternehmer die wesentlichste Herausforderung dar. Aus diesen beiden Gesichtspunkten entwickelten sich in den vergangenen Jahrzehnten zwei der größten Forschungsfelder auf dem Gebiet des Unternehmertums: der unternehmerischen Ausbildung (engl. Entrepreneurial Education) und der unternehmerischen Finanzierung (engl. Entrepreneurial Finance). Diese Dissertation besteht aus insgesamt drei Studien, die neue Erkenntnisse auf beiden Gebieten hervorbringen und somit einen wesentlichen Beitrag zur aktuellen unternehmerischen Forschung leisten.

Die erste Studie befasst sich mit dem Gebiet der unternehmerischen Ausbildung und untersucht, wie das universitäre Ökosystem auf die Innovationsfähigkeiten von Studierenden Einfluss nehmen kann. Basierend auf einer Umfrage von über 300 Studierenden vor und nach ihrem ersten Studienjahr weise ich in dieser Studie nach, dass sich einzelne Elemente des universitären Ökosystems durchaus positiv auf die unternehmerische Entwicklung von Studierenden auswirken können. Somit weist diese Studie durch empirische Befunde ebenfalls darauf hin, dass Individuen durchaus die Fähigkeiten für erfolgreiche Unternehmerische Handlungen erlernen können und unterstreicht dabei die Rolle von Universitäten und deren Relevanz für dieses Unterfangen.

Die zweite und dritte Studie befasst sich jeweils mit dem Gebiet der unternehmerischen Finanzierung, bezogen auf ein noch recht junges Phänomen auf diesem Gebiet: Dem Crowdfunding als Alternative zu traditionellen Finanzierungsmöglichkeiten wie Risikokapitalfinanzierung. Die zweite Studie untersucht hierbei, wie die Verwendung von Wörtern die mit Kreativität assoziiert werden, im Rahmen der Präsentation einer sol-

chen Crowdfunding-Kampagne Auswirkungen auf deren Erfolgswahrscheinlichkeit haben können. Diese Studie basiert auf einem Datensatz mit mehr als 39.000 Crowdfunding-Projekten, die zwischen 2009 und 2019 durchgeführt wurden. Die Ergebnisse der Studie zeigen auf, dass die Verwendung von Wörtern die mit Kreativität assoziiert werden, in ihrer Verwendung zur Beschreibung der Kampagne ein signifikantes Potential aufweisen, die Erfolgswahrscheinlichkeit der Kampagne zu erhöhen. Diese Studie leistet damit einen weiteren Beitrag hinsichtlich der Identifikation von Signalen zur Reduktion von Informationsasymmetrien zwischen Gründern und Investoren. Die dritte Studie untersucht daran anschließend, wie die Projektinitiatoren ihre Unterstützer über den aktuellen Stand der Kampagne informieren können und sollten. Unter Verwendung eines Datensatzes von 909 Crowdfunding-Projekten untersucht diese Studie hierbei, welche Themen durch dieses Informationsmittel (engl. „Updates“) ein besonders hohes Potential aufweisen, potentielle Unterstützer von der Qualität des Projektes zu überzeugen und infolgedessen einen finanziellen Beitrag zu dem Projekt zu leisten.

Jede in dieser Dissertation behandelte Studie wird dabei unter Zuhilfenahme empirischer Verfahren durchgeführt. Die empirische Methodik wird hierbei in jedem zugrunde liegenden Kapitel detailliert erläutert. Ebenso befasst sich jedes einer Studie zugrunde liegendes Kapitel zunächst mit einem Überblick des aktuellen Forschungsstandes, sowie der Herleitung der auf die jeweilige Studie bezogenen Hypothesen. Anschließend werden die empirischen Ergebnisse jeder Studie vorgestellt und ausführlich diskutiert. Im Schlussteil dieser Dissertation wird der theoretische und praktische Beitrag der ermittelten Ergebnisse zusammengefasst.

Acknowledgments

This dissertation was written as part of my work as a research assistant at the Department of Entrepreneurship at the Technical University of Darmstadt. I would like to take this opportunity to thank a handful of people without whom this dissertation would not have been possible.

First of all, I would like to thank Prof. Dr. Carolin Bock for the chance to write this dissertation at her department. Without her support and the trust over the last years, this dissertation would not have been possible.

Furthermore, I would like to thank Prof. Dr. Alexander Kock for taking on the role of the second examiner. I would also like to thank Prof. Dr. Alexander Kock for his support in every respect over the last years.

I would also like to thank my colleagues from the Department of Entrepreneurship and the Department of Technology and Innovation Management, especially Sven Siebeneicher and Christian Resch, who supported me until the finalization of this dissertation and became true friends for me in this time.

I would also like to take this opportunity to thank Max Windecker and Philipp Sach, who made a valuable contribution to this dissertation as part of their student theses.

Finally, I would like to thank my family and friends for their insatiable support over the past years. First and foremost, my parents, who have always believed in me and without whose support this undertaking would not have been possible. My best friend Christopher, with whom I have been friends all my life and who has steadfastly accompanied me on this journey. And of course, I am thankful for my partner Nadine, my favorite team member, who always had the right words ready for me and supported me the entire way.

Table of Contents

Abstract	iv
Zusammenfassung	vii
Table of Contents	xi
List of Figures	xiv
List of Tables	xv
1 Introduction	1
1.1 Research Topic and Motivation	1
1.2 Theoretical Background and Development of Research Questions	8
1.2.1 Entrepreneurial Education	8
1.2.2 Crowdfunding as a new phenomenon of entrepreneurial financing	10
1.3 Development of Research Questions	16
1.3.1 The entrepreneurial ecosystem and its influence on innovation capacities of undergraduate students.....	16
1.3.2 The indication of creativity and its effect on the probability of success of crowdfunding projects	17
1.3.3 The role of updates to signal project quality in reward-based crowdfunding	19
1.4 Structure of the dissertation.....	21
2 How the university ecosystem shapes the innovation capacities of undergraduate students – evidence from Germany	24
2.1 Introduction.....	25
2.2 Literature Review.....	28
2.2.1 Educational programmes	28
2.2.2 Universities ecosystem	29
2.3 Theoretical framework and hypotheses development.....	33
2.3.1 Faculty challenge	39
2.3.2 Faculty interaction	40
2.3.3 Functional experiences	41
2.3.4 Connecting experiences	42
2.4 Data and sample	43
2.4.1 Measurement of innovation capacities (dependent variable)	46
2.4.2 Independent variables.....	46
2.4.3 Control variables.....	49
2.5 Empirical analysis and results	50

2.5.1 Empirical analysis	50
2.5.2 Results	52
2.6 Discussion	54
2.7 Limitations and future research	59
2.8 Conclusion and practical implications	62
3 The indication of creativity and its effect on the probability of success of crowdfunding projects	68
3.1 Introduction	69
3.2 Literature review.....	71
3.2.1 Crowdfunding research.....	72
3.2.2 Creativity research	74
3.2.3 Creativity in the context of entrepreneurship and fundraising	74
3.3 Theoretical background and hypotheses development	77
3.3.1 Signaling theory in the context of crowdfunding	79
3.4 Methodological approach.....	85
3.4.1 Measuring creativity	86
3.4.2 Reliability and Validity.....	90
3.5 Data	91
3.5.1 Dependent variable.....	93
3.5.2 Independent variables.....	93
3.5.3 Control variables.....	95
3.5.4 Variable transformation	96
3.6 Results	96
3.7 Generalizability and Robustness	103
3.7.1 Robustness of findings	103
3.7.2 Generalizability of findings.....	103
3.8 Discussion	105
3.9 Limitations and future research	108
3.10 Conclusion	111
4 Investigating the role of updates to signal project quality in reward-based crowdfunding.....	116
4.1 Introduction.....	117
4.2 Literature review.....	118
4.3 Theoretical background and hypotheses development	123
4.3.1 Structural characteristics of updates in crowdfunding	124

4.3.2	Content of updates in crowdfunding.....	128
4.3.3	Community engagement.....	132
4.4	Methodological approach and data.....	133
4.4.1	Dependent variable.....	136
4.4.2	Independent variables.....	136
4.4.3	Control variables.....	139
4.5	Results.....	142
4.6	Discussion.....	151
4.7	Limitations and future research.....	154
4.8	Conclusion.....	155
5	Overall Conclusion and Contribution.....	157
5.1	Theoretical Contribution.....	158
5.2	Practical Contribution.....	159
6	References.....	xvi

List of Figures

Figure 1: The entrepreneurial process (Adapted from Baron, 2002, 233)	4
Figure 2: Visual illustration of the methodology for the creation of the word list	88
Figure 3: Interactions between creativity and experience	101
Figure 4: Interactions between creativity and video inclusion.....	101
Figure 5: Interactions between creativity and images	102

List of Tables

Table 1: Astin’s five postulates of the Student involvement theory (Astin 1984, 519)	34
Table 2: Descriptive Statistics of the Sample.....	45
Table 3: Properties of Measurement Items.....	48
Table 4: Correlation Matrix of Model Constructs	51
Table 5: OLS analysis results	53
Table 6: Appendix A – Literature overview on educational research.....	65
Table 7: Descriptive findings.....	97
Table 8: Correlations	99
Table 9: Logistic regression results	100
Table 10: Appendix B – Final word list on product creativity.....	112
Table 11: Appendix C – Average marginal effects and marginal effects at the mean	114
Table 12: Coding scheme examples (Hypothesis 2)	138
Table 13: Coding scheme examples (Open research question).....	140
Table 14: Descriptive findings.....	144
Table 15: Correlations	146
Table 16 - Logistic regression results (Hypothesis 1)	147
Table 17 - Logistic regression results (Hypothesis 2)	148
Table 18 - Logistic regression results (Open research question).....	149

1 Introduction

1.1 Research Topic and Motivation

The existence of entrepreneurship as a provider of innovations for entire sectors of society has become indispensable in today's world. Policymakers and economists have also recognized that entrepreneurship plays an important role in the development of economic growth and innovation (Van Praag and Versloot, 2007; Fayolle and Gailly, 2008), job creation (Haltiwanger et al., 2013), new products, services and even markets (Knight, 2001), as well as the technological evolution of regions (Fritsch and Mueller, 2004). Entrepreneurial activities, therefore, do not only provide benefits for the initiators of these activities or the people in their immediate environment, but also for the lives of millions of people who rely on the products and services they bring to life (Baron and Henry, 2010). This circumstance has been experienced by the world in a whole new way since 2020 when the World Health Organization (WHO) declared the coronavirus a pandemic (Liguori and Winkler, 2020). The attention of the world population to this health pandemic-based crisis resulted in substantial changes in our lives (Ratten, 2021) and until now this pandemic remains one of the most significant crises of modern times (Alon et al., 2020). In these challenging times, entrepreneurial initiatives brought a variety of solutions to light that addressed the handling and safety of this pandemic. Just a few years ago, no visitor to a restaurant, shop, or other institution was interested in tracking their stay. Today, only a short time later, smartphone apps such as LUCA or COVID-Pass became an indispensable part of our everyday lives. This underlines the relevance and indispensability of entrepreneurship, even in times of crisis, as it enables a positive outlook on new conditions (Ratten, 2021).

However, regional differences in entrepreneurial activity can be identified, which has led to increased interest in identifying factors at the regional, national, and industry levels to explain this difference (Reynolds et al., 1994; Bosma et al., 2008; Audretsch, Belitski, et al., 2019; Belitski et al., 2021). The study of entrepreneurship has thus developed into a complex and heterogeneous academic field with a variety of approaches over the past generation (Audretsch, 2012). This long tradition of thinking about entrepreneurship can be traced back at least to the work of Schumpeter (1911), who

pointed to the relevance of small firms and the accompanying creative destruction of those firms, which he constituted as the essential entrepreneurial function.

Despite its diversity as a subject of study, three main perspectives on entrepreneurship as a subject of research can be identified. First, entrepreneurship is treated within the organizational context. In this view, it is this organizational context in itself that leads to the organization being considered or classified as entrepreneurial, no matter what type of behavior is practiced nor what performance or expected performance the venture fulfills. The second perspective deals with entrepreneurship based on its performance criteria. In this perspective, a key feature is the output of activities, so that only organizations, companies, or individuals that meet a certain level of performance are considered entrepreneurial and are considered in the context of this perspective. Finally, the third perspective deals with the view of behavior as a decisive criterion. This perspective, in particular, is related to the aforementioned Schumpeterian view of entrepreneurship and includes at its core the two entrepreneurial skills of identifying entrepreneurial opportunities and then commercializing them (Audretsch, 2012).

Within initial research endeavors, entrepreneurship was progressively conceived as a complex process in which the entrepreneur himself plays a central role, and whose characteristics attracted increased interest (Baron, 2002). At the heart of entrepreneurship are special skills, such as the identification and exploitation of entrepreneurial opportunities by special people who, through their active actions, bring new products and services to market (Venkataraman, 1997; Shane and Venkataraman, 2000). Already in early studies of entrepreneurship, Baumol (1968) pointed out that "*Trying to understand entrepreneurship without considering entrepreneurs is like trying to understand Shakespeare without including Hamlet in the discussion!*" (Baumol, 1968, p. 67). To gain an understanding of the identification and distinguishing characteristics of these special people, entrepreneurs, a wide variety of aspects have been studied over the past decades. On the one hand, cognitive aspects are examined, in which, for example, the intention of the entrepreneur has emerged as an important factor for understanding entrepreneurial actions (Schjoedt and Shaver, 2004; Littunen and Niittykangas, 2010)

Entrepreneurship cannot be described as a discrete, single event or action, but rather must be understood as a continuous process that sometimes takes years to successfully execute (Birley, 1985; Shane and Venkataraman, 2000). Moreover, the process involves

many different actions and does not unfold in a straightforwardly or simply manner (Shane and Eckhardt, 2005). During this process, entrepreneurs act as individuals with specific skills, which they use to identify opportunities and turn them into tangible economic benefits through their active actions. In addition to identifying opportunities, these actions include, for example, evaluating the economic potential of these opportunities, obtaining the resources necessary to implement them, and developing a strategy or business model to successfully execute the venture and the actual exploitation (Baron, 2002). Over the years, several proposals have been made regarding the systematization and standardization of the entrepreneurial process (e.g. Stevenson, 1985; Venkataraman, 1997). Due to the complexity of entrepreneurship as a subject of research, these models differ in detail mainly in the small proportion of aspects that can influence the entrepreneurial process they include. This leads to the fact that each model of the entrepreneurial process is to be seen as a strong oversimplification of this very process. Despite the high diversity of aspects included in different models of the entrepreneurial process, early proposals of this modeling already showed a uniform division of the entrepreneurial process into three phases: The phase before the actual establishment of the company or entrepreneurial activity (pre-launch phase), the subsequent phase in which the actual establishment or entrepreneurial activity takes place (start-up phase, which usually includes the first twelve to 24 months of the start-up venture), and the subsequent phase in which the start-up project is further developed and in which the entrepreneurial activity proves to be successful by surviving on the market or recording growth or fails and the entrepreneurial activity is discontinued. (Baron, 2002).

Referring to the fact that, from the perspective of entrepreneurial research, the pre-launch and start-up phases are of decisive importance, since ventures that go beyond the start-up phase tend to fall into other fields of research, such as organizational behavioral research, Baron (2002) developed a slightly modified, likewise three-stage model of the entrepreneurial process which still enjoys a high standing in current entrepreneurial research (e.g. Kushev et al., 2019). Figure 1 graphically represents the entrepreneurial process according to Baron (2002).

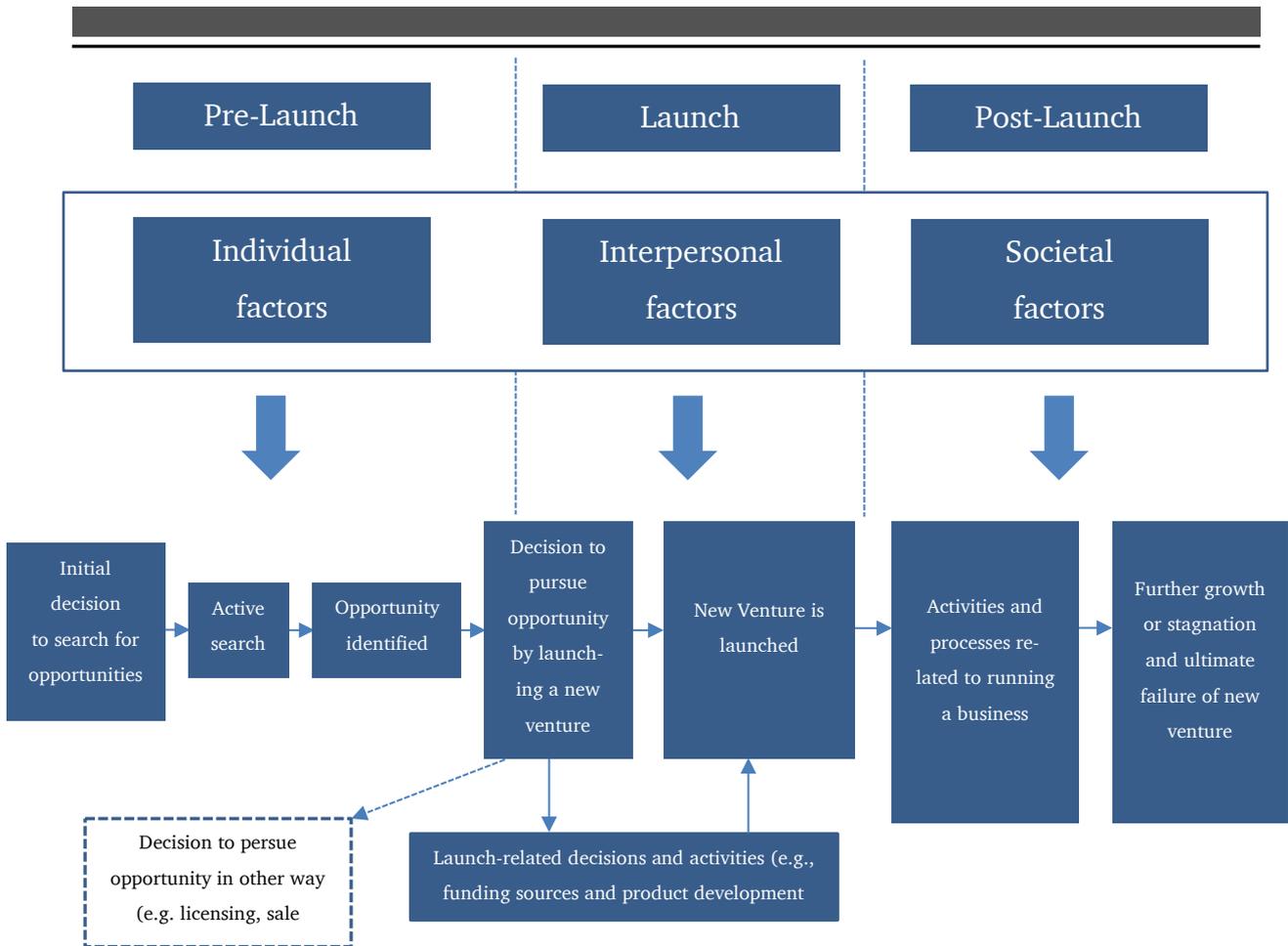


Figure 1: The entrepreneurial process (Adapted from Baron, 2002, 233)

The model according to Baron (2002) divides the entrepreneurial process into the pre-launch phase, the launch phase, and the post-launch phase, each of which can be influenced by different groups of variables. Despite the high diversity and variety of variables that can influence the activities of a potential entrepreneur (Katz and Shepherd, 2003), these variables can be grouped into the three main categories: individual-level variables, the group- or interpersonal-level variables, and societal-level variables (Baron, 2002). The individual-level variables, deal with the individual, the entrepreneur himself and his cognition, knowledge, and skills, as well as his character traits, values, and norms (Baum and Locke, 2004). The second category, group or interpersonal variables, captures the entrepreneur's social networks, social capital, and the associated benefits from such networks and values (Nahapiet and Ghoshal, 1998; Kozlowski and Ilgen, 2006). The third category, societal-level variables, captures industry-related factors, technological advantages, economic and financial markets, and their characteristics,

and the competitive environment the entrepreneur is facing (Patzelt et al., 2008; Baron and Henry, 2010).

This dissertation aims to identify new findings in the context of entrepreneurial research that can be attributed to the three phases of the entrepreneurial process. With these insights, the understanding of the stages of the entrepreneurial process and related influencing factors will be expanded to provide potential entrepreneurs with effective techniques, skills, and knowledge (Baron and Henry, 2010) to achieve successful entrepreneurial endeavors. The findings of this dissertation have their origins in two overarching areas of entrepreneurial research: entrepreneurial education, and the financing of entrepreneurial ventures.

The first phase of the entrepreneurial process, the prelaunch phase, deals with the activities that potential entrepreneurs carry out before the actual start-up. In this first phase, the potential entrepreneur must make an initial decision to look for entrepreneurial opportunities and transfer them into entrepreneurial action through an accumulation of activities. The prelaunch phase is primarily influenced by individual and social factors. These factors include, for example, an individual's motivation to pursue entrepreneurial action, such as the desire for independence or the achievement of high levels of target attainment, but also other individual characteristics, such as a certain degree of self-efficacy or a high level of capacity persevere in the face of adversity (Shane and Venkataraman, 2000; Baron et al., 2001; Baron, 2002). The identification of entrepreneurial opportunities, one of the key aspects of entrepreneurial action (Baron, 2002), of a potential entrepreneur is strongly influenced by his knowledge base, among other factors (Baron, 1998). The interplay between knowledge and other factors is particularly important in the entrepreneurial context. Especially in the entrepreneurial context, the interplay between knowledge and other factors plays an important role, since, for example, existing knowledge without the application of a certain motivation leads to nothing, while existing motivation without existing knowledge in turn leads to random or unproductive action (Locke, 2000; Locke and Baum, 2007). In addition to the study of business activities, entrepreneurship also acts as an academic discipline (Baron and Henry, 2010), within the framework of which entrepreneurial education is a worldwide strategy measurement for the development of scientific and technological progress and economic prosperity. (Wang and Li, 2018). Accordingly, there is still no

unified consensus on whether the entrepreneur can be born or made (Henry et al., 2005) and, in this context, whether entrepreneurship can be understood as a set of principles, terms, norms, competencies, and skills that can be learned and fostered through external institutions such as universities (Caird, 1992). This is the question addressed in the first study of this dissertation. It examines the extent to which the university ecosystem can positively influence the development of entrepreneurial skills, or more precisely, the innovation skills of students.

The second phase of the entrepreneurial process, the launch phase, deals with the active actions of the entrepreneur that lead to the actual successful execution of his or her start-up venture. These include numerous actions in addition to the actual founding of an entrepreneurial activity. The second phase of the entrepreneurial process, the launch phase, deals with the active actions of the entrepreneur that lead to the actual successful execution of his or her start-up venture. These include numerous actions in addition to the actual founding of an entrepreneurial activity. However, one of the key challenges in this phase is to secure the essential resources for carrying out the start-up venture, and in particular the acquisition of financial resources (Denis, 2004; Hall and Lerner, 2010). This category of resources for the execution of entrepreneurial actions, among a variety of factors, is of particular interest in the context of the research, as they are crucial for the development, growth, and ultimately the survival of new ventures (Ebben and Johnson, 2006). Within the last decades, this circumstance has given rise to a broad field of research on entrepreneurial financing, which is not limited to the explicit study of financial ventures, but rather covers a much broader perspective (Achleitner and Braun, 2015). In addition to traditional forms of entrepreneurial financing, such as venture capital or business angel financing, crowdfunding has emerged as a potential financing option for new ventures (Belleflamme et al., 2014). The growing interest in crowdfunding due to its entrepreneurial, financial, and social capital (Pietraszkiewicz et al., 2017) has emerged into a body of literature examining the influencing factors of this phenomenon. A major focus of research in the context of this relatively new form of corporate finance will be on communication in the context of crowdfunding initiatives. As communication is one of the key elements for the success of entrepreneurial

activities (Chan et al., 2021), the second study of this dissertation deals with an investigation of the impact of specific communication mechanisms and their effects on the success of crowdfunding campaigns.

Finally, in the post-launch phase, in addition to the processes from the pre-launch phases, further processes are added to the activities within the framework of the entrepreneurial activity. In particular, this phase deals with all activities aimed at manifesting the entrepreneurial action and keeping it running (Baron and This, 2002; Baron and Henry, 2010). These activities include securing the customer base built up so far, but also new ones, as well as developing and taking decisions regarding personnel, marketing and sales strategies. Communication with customers is also of particular relevance in this phase. Here, the challenges for the entrepreneur lie primarily in establishing effective communication with the customer. This is often complicated by the “chaotic” (Baron, 2002, p. 235) environment of the startup, where the potential entrepreneur must constantly make decisions and respond to new situations, which can make effective communication with the customer difficult (Baron, 1998). Especially in this environment, cognitive biases can also impede the successful execution of the entrepreneurial action, for example by the entrepreneur falling into an excessive degree of optimism, overconfidence or an illusion of control over the entrepreneurial venture (McCarthy et al., 1993; Busenitz and Barney, 1997). In order to investigate the communication with a potential grouping of customers after the launch of an entrepreneurial activity, the third study of this dissertation addresses the question of how, in the context of crowdfunding campaigns, potential supporters are kept informed about the project to be financed through so-called updates and what types of information through this means of communication have a positive impact on the funding success of those very campaigns.

1.2 Theoretical Background and Development of Research Questions

This dissertation addresses three independent research questions, which are described and derived in detail in this chapter. First, however, a basic understanding of the two overarching themes that are the subject of this dissertation should be provided. First, the topic of entrepreneurial education is addressed. This topic is presented as part of the first independent study of this dissertation. Subsequently, crowdfunding is presented as a relatively novel financing method for young companies. This field of research is thematically located in entrepreneurial financing and is dealt with in the second and third studies of this dissertation. Subsequently, the research questions therein are presented in detail. The structure of this dissertation is described at the end of this chapter.

1.2.1 Entrepreneurial Education

Due to the significant relevance of entrepreneurship to the development and advancement of economic growth and the generation of innovation, as emphasized by decision-makers and economists (Van Praag and Versloot, 2007; Fayolle and Gailly, 2008), education for innovation and entrepreneurship has become a world-wide strategic measure to develop scientific and technological progress and economic prosperity (Wang and Li, 2018). As research has indicated that higher and outperforming levels of entrepreneurship can be achieved through education (Jack and Anderson, 1999; EC, 2006), entrepreneurial education programs within higher education experienced rapid growth of interest over the past decades (Neck and Greene, 2011; Fayolle, 2013). Despite the consistently mixed consensus on whether entrepreneurs can be born or made (Henry et al., 2005), the ongoing expansion of entrepreneurial education programs underpins that entrepreneurship is a collection of skills, principles, norms, and abilities (Caird, 1992; Kirby, 2004) and thus can be learned and entrepreneurs can be developed (Erikson, 2003). The growing research interest regarding the potential of entrepreneurial education revealed a large stream of potential influencing factors within this research area. Specifically, these research areas deal with entrepreneurial knowledge, skills, behavior, and intention and their effectiveness in influencing entrepreneurial activities (Cui et al., 2021). In the course of this wide-ranging research, it was also determined that the influence of entrepreneurial education varies in local or national con-

texts (Ahmad et al., 2018; Chen and Agrawal, 2018). Despite the largely positive findings of entrepreneurial education in the context of higher education, there are also less positive findings, (Pittaway and Cope, 2007; Oosterbeek et al., 2010; Martin et al., 2013; Bae et al., 2014) that can sometimes be traced back to pedagogy, in that studies have shown that entrepreneurial attributes such as extracurricular activity, optional courses, and practice-based activity can actively influence the entrepreneurial intention of students (Piperopoulos and Dimov, 2015; Karimi et al., 2016; Arranz et al., 2017). Despite great efforts in the research context, there is still no clear consensus on which type of entrepreneurial education yields which manifestations of entrepreneurial activities. This circumstance can be attributed to the diversity of entrepreneurial education paradigms, ranging from a causal and linear understanding of planning to efforts that deal with the mindset of students, to a process-based entrepreneurial and methodological approach (Rasmussen and Nybye, 2013).

Consequently, an important point of investigation in recent years has been the environment of the university ecosystem. Baumol (2004) points out that universities play a crucial role in teaching innovation and promoting innovation capacities. Universities are attributed an important role in the development of regional innovation by educating and preparing students for diverse roles in future academic and professional development and leadership. This results in new needs and concerns related to universities' role in innovation, which can be divided into qualitative and quantitative aims (Reichert, 2019). Qualitative aims can be understood as the development of specific skills and competencies, such as the preparation of students for disruptive innovation, the promotion of systemic understanding, competencies, and capacities, as well as, especially prevalent in times of the current covid-19 pandemic, the promotion of digital skills. Processes such as capability-building reflect one of the major points for universities' so-called third mission alongside traditional objectives, such as teaching and research (Rampersad 2015; Liefner and Schiller 2008; Hu and Mathews 2008; Perkmann et al. 2013). Universities respond to these qualitative aims by executing teaching reforms like the extension of interdisciplinary, project-based learning, the support of students' self-organization, and the extension of mentoring. Besides qualitative aims, exemplary quantitative aims of universities comprise the extension of the skill base for the region or country, an increased engagement in the STEM area, especially regarding digital

know-how as well as the re-skill and upskill in response to innovation needs (Reichert, 2019).

An additional and specific subject to universities' potential promoting regional innovation, is its influence on entrepreneurial ecosystems. These ecosystems can be understood as combinations of social, political, economic, and cultural elements within a region, supporting the development of innovation and encouragement of nascent entrepreneurial activity and culture (Spigel, 2017). As entrepreneurial activity is critical to economic progress (Malecki, 1997; Drucker, 1999; Quadrini, 2000; Nijkamp, 2003), the eventual attempt or even success in entrepreneurial activities can serve as a measure of universities' impact on entrepreneurial education and ultimately in economic growth and regional development (Hallam et al., 2014). Models such as the Triple Helix model, developed by Etzkowitz and Leydesdorff (2000) highlight regional economic development, eventually with industry and government as universities' third mission (Heaton et al., 2019). Universities therefore increasingly follow this path of serving as an entrepreneurial university, engaging in technology transfer and commercialization, providing entrepreneurial skills to students and the wider community (Shapira and Wang, 2009).

1.2.2 Crowdfunding as a new phenomenon of entrepreneurial financing

Despite their crucial role in generating innovation in any economy, new companies do not have historical information or a demonstrably sustainable business plan, which makes identifying their potential for success much more difficult (Blank, 2013; Gompers et al., 2020; Vazirani and Bhattacharjee, 2021). Due to this circumstance, young entrepreneurs are occasionally difficult to finance (Denis, 2004; Hall and Lerner, 2010) and entrepreneurs see securing sufficient financial resources as one of the most challenging tasks in their entrepreneurial endeavors (Gorman and Sahlman, 1989; Kortum and Lerner, 2000; Gompers and Lerner, 2004; Neeley and Van Auken, 2010).

Entrepreneurial finance research covers a broad and heterogeneous view that is not exclusively limited to young companies and or financial issues (Achleitner and Braun, 2015). Research has identified numerous factors that can influence investment decisions, but there are still many research gaps in this area. The stream of research on

entrepreneurial finance over the past two decades has focused on the entrepreneurial team, or the founder, and the underlying product or service, but there has also been a drift towards other topics, such as intellectual property rights, the economic crisis, and social capital as emerging fields of research. (Vazirani and Bhattacharjee, 2021). Despite the great variety of subjects to be studied in the context of entrepreneurial finance, they can be grouped into two perspectives. First, from the point of view of the life cycle of the underlying business, and second, from the point of view of the stakeholders involved in the start-up activities (Achleitner and Braun, 2015). The first category considers the different stages of entrepreneurial activity and, in this context, different sources of capital (Rossi, 2014). This perspective of entrepreneurial financing particularly focuses on firms that are in an early phase of development and are either not yet organized as a legal entity or have just done so. As a result, the underlying companies still have only a weakly developed history and their product or service is also still at a very early or immature stage (Achleitner and Braun, 2015; Grichnik et al., 2017). The second perspective addresses the different interest groups of the entrepreneurial venture, the founder himself, the investor, and the asset manager. In the course of this dimension, entrepreneurial research has primarily dealt with the concept of venture capital. This is mainly due to the volatile nature of young companies and the associated high probability of failure, which has elevated venture capital to a highly relevant financing alternative, alongside the equity capital of founders, traditional financing by banks, or state subsidy programs (Bertoni et al., 2011; Gompers et al., 2020).

Over the past 30 years, venture capital financing has been at the forefront as one of the most relevant sources of financing for innovative companies, as evidenced, for example, by estimates that half of all true initial public offerings have previously received venture financing (Gompers et al., 2020). Further, Gornall and Strebulaev (2020) estimate that one-fifth of market capitalization and 44% of research and development spending by publicly traded U.S. companies is accounted for by companies previously backed by VCs.

In the last few years, crowdfunding has emerged as a novel alternative and recent phenomenon for securing financial resources for young companies that do not have access to venture capital or other forms of traditional financing (Mollick, 2014; Guan, 2016; Moritz and Block, 2016).

The term crowdfunding originally emerged as a form of crowdsourcing, which is described as outsourcing various tasks to an undefined collection of people through the use of information technology (Leimeister, 2012; Blohm et al., 2013; Lukkarinen et al., 2016). Crowdfunding initiatives can be defined as been phrased by Schwienbacher and Larralde, who describe these initiatives as *“an open call, essentially through the Internet, for the provision of financial resources by a group of individuals instead of professional parties either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes”* (Schwienbacher and Larralde, 2012, p. 4). This definition points to another special feature of crowdsourcing or crowdfunding, namely the goal of benefiting from the wisdom of the crowd (Surowiecki, 2004) and subsequently from a collective intelligence (Leimeister, 2010).

In particular, the development of Web 2.0 is responsible for the fundamental opportunity to develop crowdfunding as a significant financing instrument of the current era, as it facilitates the evolution of new and innovative business models in which the digital user is no longer at the end of the value chain, but plays an important role and acts as an integral part, becoming a co-decision maker (Brenner et al., 2014; Brüntje and Oliver, 2016).

This internet-based form of financing has grown in relevance and volume in equal measure in recent years, as reflected in the figures for global alternative financing volumes, which are largely comprised of crowdfunding initiatives and have seen a growth of 185% to a total of \$371 billion between 2015 and 2017 (Ziegler et al., 2019).

In particular, successful crowdfunding campaigns can lead to clarifying the demand for the underlying product and thus, following the campaigns, providing access to more traditional funding sources that they would not have received without the crowdfunding initiative (Dingman, 2013). Thus, crowdfunding as a form of financing also has the potential to fill chronic funding gaps in the early stages of young companies that have been exacerbated in particular by current financial crises (Moritz and Block, 2016). In addition to the actual function of raising financial resources, however, the implementation of such campaigns can also result in other benefits for the underlying company, such as very timely feedback from potential stakeholders during the development phase of the underlying product or service, demonstration of the legitimacy of the entrepre-

neurial venture, validation of the market, and access to networks with critical stakeholders, which can range from prospective investors to potential business partners or even media attention (Gerber et al., 2012; Schwienbacher and Larralde, 2012; Frydrych et al., 2014; Mollick and Kuppuswamy, 2014). Beyond the basic concept of crowdfunding as a financing instrument, it is also seen as an important step towards a globalized society that promotes cultural and geographic diversification, as well as economic stability and equality, reducing distances and bridging gaps (Brüntje and Oliver, 2016).

Crowdfunding projects can vary widely in their objective and scope, from small amounts to hundreds of thousands of dollars in seed capital as an alternative to traditional financing, such as venture capital (Schwienbacher and Larralde, 2012).

Despite numerous forms, crowdfunding initiatives can be divided into four categories: lending, equity and reward-based crowdfunding, and donations (Mollick, 2014; Shneor and Vik, 2020). First, lending-based crowdfunding, which is characterized by individuals or institutions granting loans to borrowers with the expectation of getting this amount back, including interest, within a certain period of time. First, lending-based crowdfunding, which is characterized by individuals or institutions granting loans to borrowers with the expectation of getting this amount back, including interest, within a certain period of time. Second, equity crowdfunding, which is characterized by transactions in which individuals or institutional funders buy an ownership stake in the underlying company or organization. Third, reward-based crowdfunding, in which funders receive non-monetary compensation, products, and services in exchange for their financial support. And fourth, donation-based crowdfunding, in which supporters provide financial support based on philanthropic or socially-driven motivations without the expectation of compensation or repayment (Ziegler et al., 2019).

The growing interest in crowdfunding due to its entrepreneurial, financial, and social capital (Pietraszkiewicz et al., 2017) has emerged into a body of literature examining the influencing factors of this phenomenon. Within this novel field of entrepreneurial finance research, seven main streams can be identified. In these seven thematic areas, studies are addressing motivations of fundraisers to use CF, the determinants of successful CF practice, legal frameworks and their fit with CF realities, motivations for fund providers, the roles of social networks in CF, the roles of signaling in CF, and CF intermediary classifications and strategies (Moritz and Block, 2016; Shneor and Vik, 2020).

This academic interest in crowdfunding is reflected in the number of studies on the phenomenon, which increased sixfold from 2012 to 2017 alone (Mochkabadi and Volkmann, 2020). The greatest possible risk for the investors (in the crowdfunding context, the financial supporters are often referred to as "backers") is the total loss of the funding provided. The crowdfunding market is subject to high information asymmetries due to its impersonal and information technology-driven nature. Unlike strategies used by private equity investors, for example, in-depth screening processes or individual and personal contract negotiations are not available to the crowd (Brüntje and Oliver, 2016). For this reason, the research focused on insights from traditional financing vehicles, such as venture capital financing, and their applicability to crowdfunding for alternative mechanisms to reduce information asymmetries (Block et al., 2014; Mamonov and Malaga, 2020). The identification of relevant signals to reduce information asymmetries is therefore seen as one of the most important contributions to the future success of crowdfunding initiatives as financing alternatives for young companies (Brüntje and Oliver, 2016). Recent research extensively draws on signaling theory (Spence, 1973) and examined the extent to which provided disclosures can reduce information asymmetries and thus increase the likelihood of success of crowdfunding campaigns. Originally derived from Spence (1973), signaling theory serves as an explanatory model to describe the behavior of two parties (individuals or organizations) who have access to different information. The sending party must choose whether and how to communicate information. The receiving party decides how to interpret the received signals. The aim of this procedure is to reduce information asymmetries (Spence, 2002) to induce an investment decision from the receiving party (Connelly et al., 2011). The utilization of signaling theory has provided the foundation for many explanations of financial transactions in the entrepreneurial fundraising context (e.g. Davila et al., 2003; Kirsch et al., 2009; Ozmel et al., 2013). Whereas the earlier stream of literature (e.g. Ahlstrom and Bruton 2006; Cosh et al., 2009; Coleman and Robb 2014; Jaaskelainen et al., 2006; Robb and Robinson 2014) primarily focused on the types of information that can attract angel investors and venture capitalists to invest in new ventures (Mäkelä and Maula, 2006; Schwienbacher, 2007), recent literature with crowdfunding being the specific object of investigation in the fundraising universe also started to draw on this theory (e.g. Anglin et al., 2018; Ahlers et al. 2015). Of the four

forms of crowdfunding presented, reward-based crowdfunding is of particular interest to researchers (Shneor and Vik, 2020). Crowdfunding initiatives can be carried one of two different models: "All-or-Nothing" (AON) or "Keep-It-All" (KIA). KIA campaigns are characterized by the fact that the project initiators are allowed to keep the amounts provided by the investors in full, only reduced by a one-time fee charged by the platform operator. In contrast, project creators set a funding goal in AON models (Cumming et al., 2020). If this funding goal is not met, the creators receive no money and the supporters no rewards. As the popularity of crowdfunding as a widespread tool for securing financial resources for young companies has attracted great attention from a practical and theoretical perspective, it has already resulted in a number of lessons learned for the successful implementation of such funding initiatives over the past years (Guan, 2016). However, not all questions regarding how this novel financing method can be successfully executed have yet been answered. For this reason, this dissertation deals with the phenomenon of crowdfunding based on two studies. In the course of this dissertation, two studies will be presented that relate to the identification of new insights into the successful practice of crowdfunding, specifically in relation to reward-based crowdfunding. These studies start at two different points in the progression of the crowdfunding campaign. The first study focuses on a specific type of communication during the initiation of a crowdfunding campaign and its potential influence on the success of the campaign. The second study then focuses on a method of informing the crowd about the status and development of the project provided by the respective crowdfunding platforms during the course of the campaign.

1.3 Development of Research Questions

1.3.1 The entrepreneurial ecosystem and its influence on innovation capacities of undergraduate students

The question, of whether universities can influence the behavior and development of students altered to specific investigations of potential influencing factors provided by the university to increase their innovative behavior and skillset that are potentially capable to change students (Mayhew et al., 2016). Previous research in higher education mainly focused to investigate occasional factors and their influence on specific abilities or intentions of students. These occasional factors include personal factors of students (Zhao et al., 2005; Norwani, 2009), the influence of students' participation in specific courses (Kourilsky and Esfandiari, 1997; Mentoor and Friedrich, 2007) or students participation in extracurricular events (Pascarella et al., 2004). Investigating these potential influencing factors, research in higher education to date has found that occasional factors of higher education institutes can affect students' intention to innovate (e.g. Mayhew et al. 2012), entrepreneurial intentions (e.g. Passaro, Quinto, and Thomas 2018; Zhao et al. 2005; Volery et al. 2013), or the development of certain cognitive skills of students (Pascarella et al. 2014; Kim et al. 2017). However, these studies have mainly focused on the potential influence of individual factors on specific abilities or intentions of students, leaving open questions, as some studies only offer qualitative approaches to optimizing the university environment, while other, quantitative studies only focus on partial aspects of the university environment.

For this reason, this study represents a comprehensive approach to identify influential factors on specific student competencies (i.e. innovation capacities) that takes two aspects into account. First, personal characteristics of students including demographic information such as age, gender, and previous family experience with innovation and entrepreneurship and personality traits such as extroversion and openness to new experiences. Second, we investigate universities' educational influence, represented by university courses, and third, the impact of the university environment and its infrastructure itself. We empirically investigate the potential influence of universities' ecosystem on students' innovation capacities using four kinds of perspectives within this ecosystem: faculty challenges, faculty interaction, functional experiences and connect-

ing experiences. As these factors showed high relevance in past studies in higher education, we use them to generate a comprehensive picture of the university's experiences and services. Therefore, the study within this dissertation is intended to encourage decision-makers at educational institutions to focus on developing a climate of innovation taking into account a variety of organizational structures and amenities besides focusing on developing innovation-friendly teaching programs. By concentrating on the development of skills to enhance innovation, students can use these skills as an instrument for assessing the existing and future needs of society and develop viable and innovative solutions to the challenges of the next decades (Bezerra, 2017). Moreover, due to the society-changing mechanism of digitalization, a plurality of innovations arise in technical environments (Löbbecke, 2006). This development leads to interest in how students of a technical university, with a potential high affinity to technical innovations, benefit from the university's ecosystem in developing their innovation capacities. Consequently, the first research question in this dissertation is formulated as follows:

Research Question 1: *How can the university ecosystem shape the development of innovation skills in undergraduate students?*

1.3.2 The indication of creativity and its effect on the probability of success of crowdfunding projects

In addition to traditional forms of financing (e.g. venture capital, business angels), crowdfunding has emerged as a potential financing option for new ventures (Belleflamme et al., 2014). Crowdfunding initiatives can be enabled by the growth of modern technologies such as the internet on dedicated platforms, offering an institutional setting that differs from that of traditional financing, with potential investors from all over the world to facilitate the financial support of those entrepreneurs who do not have the means to realize their projects through traditional funding channels (Belleflamme et al., 2014; Mollick, 2014; Pietraszkiewicz et al., 2017). This results in increasing anonymity between funders and entrepreneurs, democratizing the financial decision by collecting funds over a large number of relatively small contributions from each individual (Calic and Mosakowski, 2016; Mollick, 2014; Ordanini et al., 2011).

The growing interest in crowdfunding due to its entrepreneurial, financial, and social capital (Pietraszkiewicz et al., 2017) has emerged into a body of literature examining the influencing factors of this phenomenon. As communication represents a key determining factor for the success of entrepreneurial initiatives (Chan et al., 2021), research within the context of crowdfunding focused on narratives of the underlying campaigns. This research mostly refers to the descriptive text of crowdfunding campaigns and has shown that the use of words in the sense of signaling theory (Spence, 1973) can be interpreted as a costless signal with the potential to influence the likelihood of success of crowdfunding campaigns (e.g. Pietraszkiewicz et al., 2017; Anglin et al. 2018; Parhankangas and Renko 2017).

Despite extensive research in the field of fundraising, the influence of creativity as an inseparable capability within the field of entrepreneurship (Gilad, 1984) has so far been insufficiently explored in relation to fundraising activities (Davis et al., 2017).

Over the last 30 years, research on creativity has become increasingly relevant in the most prestigious academic journals (Liu et al., 2016). Early studies already indicated that the creative abilities of individuals make a substantial contribution to innovation, competitiveness, and the survival of organizations (Nonaka, 1991). Creativity can be understood as a complex phenomenon and includes disciplines such as problem construction communication, problem definition, and problem identification (Runco and Chand 1994, 1995; Basadur, 1994, 1997; Mumford et al., 1991; Sternberg, 1988; Treffinger et al., 1994).

However, the dynamic and complex nature of creativity is accompanied by increased difficulty in its definition and measurement (Mumford et al., 1997; Batey, 2012). Recent research investigated creativity from two perspectives. On the one hand, what influences creativity and, on the other, how a certain degree of creativity can affect other factors. Another important aspect of creativity is the context in which it is examined. For example, perceived time pressure can have a negative effect on creativity for product managers, while it can stimulate scientists to be more creative (Andrews and Farris, 1972; Andrews and Smith, 1996). Furthermore, the perception of creativity can also differ with regard to the target group addressed. Research has shown that experts with a high level of knowledge in a particular field were more likely to rate something as creative than potential customers who do not dispose of a comparable level of industry

knowledge (Stone et al., 2000). Starting from an idea, language can serve as the medium that conveys and furthermore shapes creativity (Kaufman and Sternberg, 2019). The verbal communication of creativity aims at meeting the recipient of the information and enhance his understanding (Šliogerienė and Stunžaitė, 2019) in order to ultimately convince him of the degree of innovation of an idea.

The increased degree of anonymity in the context of crowdfunding initiatives results in a high motivation for the project initiators to present the quality of the products and services they offer as efficiently as possible and to communicate the degree of innovation. As the contextual motivation of individuals has been shown to function as a key element in relation to creativity (Yang et al., 2021), project initiators may decide to underpin the creativity of their projects with an appropriate choice of words.

Since creativity is manifested as one of the central tools of entrepreneurship, the question arises of how founders can disclose their creative abilities in the context of these initiatives to finance their business successfully. As research agendas indicate that further knowledge is needed to understand individuals' investment decisions (McKenny et al., 2017; Cummings et al., 2020), this knowledge may be responsible for enabling future project initiators to better tailor their campaigns to the needs of stakeholders, which may result in a higher likelihood of success (Cummings et al., 2020).

Given this research scope regarding the role of communication as a potential performance indicator for the success of crowdfunding initiatives, the second research question of this dissertation is formulated as follows:

Research Question 2: *How does promoting crowdfunding campaigns using creative words affect the success of crowdfunding campaigns and which factors moderate this effect?*

1.3.3 The role of updates to signal project quality in reward-based crowdfunding

Given the difficulties in raising capital in the early stages (Gorman and Sahlman, 1989; Gompers and Lerner, 2004), entrepreneurs are increasingly using alternative forms of financing. Through crowdfunding, they can solicit support for their ideas from a wider audience (Kuppuswamy and Bayus, 2017). Considering the fact that crowdfunding projects have a success rate of about 40%, project creators and platform operators have

great interest in better understanding and influencing factors on crowdfunding performance.

In traditional forms of financing, the decision-making process that should ultimately result in an investment decision can be influenced by several mechanisms, such as screening, evaluation, due diligence, and negotiation (Feeney et al., 1999; Van Osnabrugge, 2000). In crowdfunding, only the product presentation in the form of a detailed description including images and videos is available as a source of information to make a decision regarding an investment. Success factors already identified in crowdfunding include project characteristics, characteristics of the project creator, and the information description in terms of quality and quantity (see Liang et al., 2020). Recent research extensively draws on signaling theory (Spence, 1973) and examined the extent to which provided disclosures can reduce information asymmetries and thus increase the likelihood of success of crowdfunding campaigns. In addition to the actual, initial presentation of the crowdfunding campaign, which consists mainly of the textual description, videos, and photos, initiators of such campaigns also have the opportunity to keep potential supporters or still undecided supporters informed about the current status of the campaign through regular updates. In these updates, the project initiators can, for example, provide information about the current progress of the development of the underlying product, actively ask for further support, or advertise other crowdfunding initiatives and thus exploit community effects. It is up to the initiators of the campaign to decide what information they want to disclose about the campaign or how often they want to inform the community about the current status of the campaign. How project initiators handle this opportunity to provide information during the campaign period is primarily influenced by the situational environment between project initiators and potential supporters, as these supporters do not have the time, capacity, or often the necessary skills to sufficiently investigate the project initiators, their companies, or the underlying business model (Ahlers et al., 2015; Lukkarinen et al., 2016). Thus, project initiators must use the available instruments, such as information through updates, as effectively as possible to signal the value of their involvement to the crowd. In this previous research, updates have been included, but mostly through the number of published updates (Mollick, 2014; Kuppuswamy and Bayus, 2017; Lagazio and

Querci, 2018). There is still a lack of knowledge about the success-enhancing characteristics of updates in reward-based crowdfunding; only for equity-based crowdfunding campaigns, content addressed in updates has already been studied in more detail (Block et al., 2018). To address this gap in research, this study examines the composition of updates in terms of their structural as well as content characteristics. Accordingly, the following research question is pursued:

Research Question 3: *Which structural and content characteristics of updates lead to an increase in the probability of success in the context of crowdfunding initiatives?*

1.4 Structure of the dissertation

As mentioned earlier in this chapter, this dissertation addresses two overarching research priorities in the field of entrepreneurship, which are represented by three independent studies. Two of these research studies have already been published in scientific journals, while the third research study has not yet been published. Each of these studies is related to one of the phases of the entrepreneurial process presented in chapter 1.1 according to Baron (2002).

The first study (Chapter 2) addresses entrepreneurial education and how the university ecosystem can positively influence students' innovation capacities. In order to investigate this research question, a questionnaire was designed within the framework of this study, which was completed by a total of 345 students, both before and after their first year at a technical university. In line with previous studies in this field, the students were asked about their assessment of personality aspects as well as their family background concerning entrepreneurship and innovation. The core of this questionnaire aimed at assessing the students' potential influence of various university factors. These factors include the faculty challenge, the interaction within the faculty, as well as the functional and connecting experiences in the context of university education. In order to measure the impact of these university factors on entrepreneurial suitability, an innovation capacity score was assigned to each student based on the questionnaire conducted, serving as the dependent variable of the empirical study. Our research shows

that both the functional experiences and the connecting experiences have a significant positive impact on the innovation capacities of students. The results of this study show, first, that teaching institutions are capable of equipping students with the very skills needed to explicitly pursue an interest in entrepreneurship. However, this study also shows that not all factors of the university are effectively utilized in the context of entrepreneurial education. Accordingly, there should be a sensitization of the decision-makers of university institutions to realize the enormous potential of the university in terms of entrepreneurial education.

The second study (Chapter 3) deals with a relatively new phenomenon in the field of entrepreneurial financing, namely crowdfunding. The study investigates the extent to which crowdfunding campaigns can be positively influenced in terms of their likelihood of success by increasingly using words associated with the creativity of a product when describing the projects. This study is part of an extensive research focus on entrepreneurial financing in recent years, which examines a wide range of factors that distinguish successful from unsuccessful companies. More specifically, this research focus examines how information asymmetries between founders and potential investors can be minimized in order to communicate project quality as efficiently as possible. To investigate the potential of using words associated with creativity on the likelihood of success of crowdfunding projects, a two-stage approach is conducted. First, a list of words was created in an iterative process in order to representatively map product creativity. The occurrence of these words was then examined in a data set consisting of 39,718 crowdfunding campaigns. Our results show that these types of words have a statistically significant effect on increasing the probability of success of crowdfunding campaigns. However, we also find that the power of this effect may differ with respect to other factors, such as the previous crowdfunding experience and the use of media. The study joins a broad body of research that focuses on identifying factors that distinguish successful from unsuccessful entrepreneurial initiatives.

The third study (Chapter 4) also focuses on crowdfunding as a means of financing companies but addresses the period after the actual initiation of the campaign. In the context of crowdfunding initiatives, initiators have various mechanisms at their disposal to

present their campaign as promisingly as possible and to convince potential investors of its quality. In addition to these mechanisms for the actual formulation of the campaign, the project initiators also have the option of informing the community about the progress of the campaign during its course by means of so-called “updates”. To examine the potential of these updates in terms of the successful exercise of the crowdfunding initiative, this study utilizes a dataset of 4,082 updates from a total of 909 crowdfunding campaigns. The results of the study provide insights on three levels. First, we identify structural features that influence updates in terms of their positive impact on the likelihood of campaign success. We further show that content that has been shown to be relevant in research on venture capital can have the opposite effect in crowdfunding. Rather, a high potential for effective use of the updates lies in actively involving the community in the design of the product and in the campaign itself.

Following the three research studies, Chapter 5 concludes with a comprehensive overall conclusion and summarizes both the theoretical and practical contribution of this dissertation.

2 How the university ecosystem shapes the innovation capacities of undergraduate students – evidence from Germany

Abstract:

In society, universities should fulfill their so-called ‘third mission’ concerning knowledge and technology transfer. However, our knowledge on the impact of the university ecosystem on students’ innovative output is still scarce. Our study sheds light on the question whether the university ecosystem stimulates students’ innovation capacities or whether innovators are mainly determined by personality traits or family background. The results of our two rounds of surveys, with a total of 345 students of a technical university in Germany, reveal that factors such as functional experiences (e.g. resources and physical spaces within the university) and connecting experiences (e.g. practical application of skills learned during courses) have significant impact on students’ innovation capacities.

Keywords:

entrepreneurship education; ecosystem; universities; innovation capacity

Publication and conference contribution:

This article was published in the journal "Industry and Innovation" on July 02, 2020 as part of the special issue on “Innovation and Entrepreneurship in Academia” (Volume 28, 2021 - Issue 3).

Citation: Carolin Bock , Daniel Dilmetz , Benjamin S. Selznick , Lini Zhang & Matthew J. Mayhew (2020): How the university ecosystem shapes the innovation capacities of undergraduate students – evidence from Germany, Industry and Innovation

DOI: 10.1080/13662716.2020.1784710

The article was presented at the 23rd Annual Interdisciplinary Conference on Entrepreneurship, Innovation and SMEs "*Opportunities of SMEs in a Globalized World*" held in Vienna, September 25th-27th, 2019. The paper was nominated for one of the best paper awards within the conference.

3 The indication of creativity and its effect on the probability of success of crowdfunding projects

Abstract:

The growing importance of crowdfunding as a fundraising option alongside traditional forms of financing resulted in an emerging stream of literature that examines the mechanisms for increasing the probability of success of crowdfunding propositions. A significant part of this literature focuses on the examination of signals that entrepreneurs can provide to reduce information asymmetries. We extend this research by investigating the proactive communication of the creativity within crowdfunding projects as a potential signal for success. Using 39,718 campaigns from Kickstarter, we investigate the occurrence of words associated with creativity and the resulting influence on the probability of success. Our results show that the proactive communication of the creativity of the projects can have a positive influence on the probability of a successful fundraising campaign. We also provide evidence that the communication of creativity can be influenced by other signals, depending on the context in which these signals are used.

Keywords:

crowdfunding, creativity, entrepreneurship, signaling

Publication and conference contribution:

This article was accepted for publication in the International Journal of Entrepreneurial Venturing on January 13, 2022 as part of the special issue on “Technology Adoption over the Stages of Entrepreneurship”.

The article was presented at the 24th Annual Interdisciplinary Conference on Entrepreneurship, Innovation and SMEs “*Entrepreneurship as Design Science*”, which was held as a virtual event from September 28 to October 2, 2020.

Authors: Bock, Carolin; Dilmetz; Daniel

4 Investigating the role of updates to signal project quality in reward-based crowdfunding

Abstract:

Despite the increased research interest in crowdfunding as a financing alternative for entrepreneurial initiatives due to its increased relevance, the question remains as to which factors distinguish successful and unsuccessful initiatives from one another. Previous research has mainly focused on factors that are relevant before the initiation of the actual campaign. However, even after the launch of the campaign, crowdfunding campaign initiators have another mechanism to convince the crowd of their project by posting updates. This study aims to investigate the potential of these updates in terms of the likelihood of success of crowdfunding campaigns. Based on a data sample of 4,082 updates from 909 crowdfunding campaigns, we investigate the effect of the structural characteristics, the content addressed in the updates and the degree and type of crowd involvement on the likelihood of success of those same campaigns. Our results show that structure can influence the potential positive impact of updates on campaign success. Most importantly, we find empirical evidence that a significantly higher potential for positively influencing the likelihood of campaign success lies in actively integrating the crowd into decision-making processes, for example, and involving them in the campaign's progress.

Keywords:

crowdfunding, updates, entrepreneurship, signaling

Publication and conference contribution:

This article has not yet been presented at a conference or considered for publication.

Authors: Bock, Carolin; Dilmetz; Daniel

4.1 Introduction

Given the difficulties in raising capital in the early stages (Gorman and Sahlman, 1989; Gompers and Lerner, 2004), entrepreneurs are increasingly using alternative forms of financing. Through crowdfunding, they can solicit support for their ideas from a wider audience (Kuppuswamy and Bayus, 2017). Considering the fact that crowdfunding projects have a success rate of about 40%, project creators and platform operators have great interest in better understanding and influencing factors on crowdfunding performance.

In traditional forms of financing, the decision-making process that should ultimately result in an investment decision can be influenced by several mechanisms, such as screening, evaluation, due diligence, and negotiation (Feeney et al., 1999; Van Osnabrugge, 2000). In crowdfunding, only the product presentation in the form of a detailed description including images and videos is available as a source of information to make a decision regarding an investment. Success factors already identified in crowdfunding include project characteristics, characteristics of the project creator, and the information description in terms of quality and quantity (see Liang et al., 2020). Recent research extensively draws on signaling theory (Spence, 1973) and examined the extent to which provided disclosures can reduce information asymmetries and thus increase the likelihood of success of crowdfunding campaigns.

In this previous research, updates have been included, but mostly through the number of published updates (Mollick, 2014; Kuppuswamy and Bayus, 2017; Lagazio and Querci, 2018). There is still a lack of knowledge about success-enhancing characteristics of updates in reward-based crowdfunding; only for equity-based crowdfunding campaigns, content addressed in updates has already been studied in more detail (Block et al., 2018). To address this gap in research, this study examines the composition of updates in terms of their structural as well as content characteristics. Accordingly, the following research question is pursued:

"Which structural and content characteristics of updates lead to an increase in the probability of success in the context of crowdfunding initiatives?"

In terms of the content of updates, the analysis shows that investment criteria from traditional funding sources are not essential in crowdfunding. Instead, it is found that actively engaging potential backers increases the likelihood of success of crowdfunding initiatives, thereby realizing the full potential of crowdfunding platforms, e.g., by providing early feedback on the project creator's products.

This study contributes to the literature in several ways. First, the results confirm that updates can serve as a unilateral signal (Clauss et al., 2018) to increase the likelihood of success of crowdfunding campaigns. Second, the study contributes to the literature on early-stage corporate finance by deepening the comparability of investment criteria between traditional forms of financing and crowdfunding. Third, as past literature has already elaborated on the importance of the crowd with respect to reward-based crowdfunding, this study demonstrates the positive effect of actively engaging the community of supporters during the campaign in the form of updates.

4.2 Literature review

Crowdfunding has been established as an alternative form to traditional financing forms, such as Business Angel and Venture Capital financing in recent years (Mollick, 2014; Mollick and Nanda, 2016; Davis et al., 2017; Parhankangas and Renko, 2017; Anglin et al., 2018) functioning as a connection between fundraisers and individual investors (Belleflamme et al., 2013). A possible explanation for the immense growth of this interest in crowdfunding activities lies within the enhanced acceptance of e-commerce and the internet that facilitate these activities (Liang et al., 2020). The term crowdfunding arose as a derivative of the overarching phenomenon of crowdsourcing (Lukkarinen et al., 2016) and can be defined as *“an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes”* (Schwienbacher and Larralde, 2012, p. 4).

Crowdfunding initiatives can be divided into four categories depending on the type of return received by the investors (Ingram and Teigland, 2014; Lukkarinen et al., 2016). First, donation-based crowdfunding is characterized by the fact that investors do not receive any reimbursement for their financial expenditures. These investment decisions are based on altruistic motivations (Ingram and Teigland, 2014). Second, debt-based

or lending-based crowdfunding where investors reclaim their invested capital including a predetermined rate of return (Liang et al., 2020). Third, equity-based crowdfunding where the investors obtain a certain amount of shares of the underlying venture (Mollick, 2014). And fourth, reward-based crowdfunding where investors receive a monetary or non-monetary reward for their contribution (Belleflamme et al., 2014; Kim et al., 2016). In the context of this study, the focus is on the investigation of the last category, reward-based crowdfunding. Reward-based CF projects can be carried one of two different models: "All-or-Nothing" (AON) or "Keep-It-All" (KIA). KIA campaigns are characterized by the fact that the project initiators are allowed to keep the amounts provided by the investors in full, only reduced by a one-time fee charged by the platform operator. In contrast, project creators set a funding goal in AON models (Cumming et al., 2020). If this funding goal is not met, the creators receive no money and the supporters no rewards. Kickstarter, the largest crowdfunding platform in the world to date (Taeuscher et al., 2020), follows the all-or-nothing approach (Kuppuswamy and Bayus, 2017). Concerning campaigns that follow the AON approach, the funding goal set by the project initiator plays a crucial role, as unrealistically set goals with regard to this funding goal lead to a high probability of failure (Kuppuswamy and Bayus, 2013; Mollick, 2014).

Information asymmetries are a well-known characteristic that can lead to problems and even market failure in the credit market (Liang et al., 2020), but also represent a challenge in the financing of entrepreneurial initiatives (Schwienbacher and Larralde, 2012). Therefore, information asymmetries represent a major challenge within crowdfunding initiatives, as disregarding this aspect can also lead to failure (Ahlers et al., 2015). Information asymmetries occur when different parties in an exchange process have different levels of information (Myers and Majluf, 1984; Narayanan, 1988; Liang et al., 2020). Replicated on crowdfunding initiatives, information asymmetries arise due to the usual early stage of the project's development, which entails uncertainty regarding the project's general viability (Courtney et al., 2017). Furthermore, investors may not have sufficient financial sophistication and may also have limited access to information regarding the industry as well as the characteristics of the project initiator, such as his previous experience (Schwienbacher and Larralde, 2012). The general character of crowdfunding initiatives, which are mostly carried out on online platforms,

makes it even more difficult to establish a relationship of trust between the project initiator and the investors, compared to the interaction between business angels or venture capitalists and the entrepreneur on a traditional financing level (Block et al., 2018). In order to reduce information asymmetries in crowdfunding initiatives, it is therefore necessary to make communication between the project initiator and the investors, represented by the crowd, as efficient as possible (Liang et al., 2020).

To reduce information asymmetries and thus increase the probability of success of crowdfunding initiatives, online crowdfunding platforms offer project initiators a wide range of mechanisms to convince potential investors of the quality of their project. As a high share of crowdfunding campaigns fail in raising their demanded amount of funds (Cumming et al., 2020) research in recent years has focused on these mechanisms and their potential impact on the success of crowdfunding initiatives (Cornelius and Gokpinar, 2020; Cumming et al., 2020; Liang et al., 2020; Mamonov and Malaga, 2020).

These studies examine various characteristics of crowdfunding campaigns, such as the characteristics of the project itself or its initiator (see Liang et al. (2020) for a comprehensive overview of recent crowdfunding research). Initial research on projects' characteristics itself primarily focused on directly visible information such as the funding goal set by the initiator, the duration of the project, the number of rewards, or the number of Facebook shares (Frydrych et al., 2014; Mollick, 2014; Hobbs et al., 2016; Kunz et al., 2017; Davies and Giovannetti, 2018; Petitjean, 2018; Yin et al., 2019). Beyond the mostly directly observable or measurable information related to the characteristics of the project, further studies investigated information that was not directly observable or measurable with regard to the project characteristics. These studies examined factors such as geographic aspects, such as the distance between investors and project initiators (Mollick, 2014; Agrawal et al., 2015; Kang et al., 2017; Guo et al., 2018), or whether the project had a sustainable (Calic and Mosakowski, 2016) or social orientation (Lagazio and Querci, 2018).

Another subject of investigation in crowdfunding research relates to the influence of the project initiators' external and internal social capital. External social capital includes connections to people outside the focal environment, while internal social capital refers to connections within the environment (Kim and Cannella, 2008). In terms of external

social capital, scholars used the number of Facebook friends (Mollick, 2014; Hobbs et al., 2016; Kromidha and Robson, 2016; Butticcè et al., 2017; Kunz et al., 2017) or the initiators' number of connections on LinkedIn profiles (Colombo et al., 2015) as a proxy to investigate the effect of the project initiators' external social capital on crowdfunding success. The internal social capital has been investigated through the use of characteristics such as the project initiators' support of other projects within the focal platform (Colombo et al., 2015; Kunz et al., 2017; Anglin et al., 2018; Davies and Giovannetti, 2018; Yeh et al., 2019) as well as the number of comments received by project initiators in previous successful projects initiated by themselves and comments they posted on external projects (Butticè et al., 2017).

In addition to the social capital of the project initiator, studies also examine the human capital of the project initiator. Human capital refers to the skills provided by the underlying individual or team that brings the new venture to life (Martin et al., 2013). In relation to crowdfunding, various factors were used to operationalize the human capital of the project initiator such as the size and composition of the funding team (Frydrych et al., 2014; Lagazio and Querci, 2018; Gallemore et al., 2019), the project initiators prior experience in crowdfunding initiatives (Davies and Giovannetti, 2018; Zhou et al., 2018; Yeh et al., 2019) including the prior success (Butticè et al., 2017; Courtney et al., 2017; Usman et al., 2019) and prior failure (Butticè et al., 2017) as well as the project initiators' entrepreneurial experience and education (Allison et al., 2017; Anglin et al., 2018; Schäfer et al., 2018; Zhou et al., 2018).

Finally, the quantity and quality of information description (Liang et al., 2020) were also used as an investigative object in crowdfunding research. Quantitative aspects of the information description include the use of media represented through the presence of videos and images (Bernstein et al., 2011; Frydrych et al., 2014; Mollick, 2014; Shi and Guan, 2016; Barbi and Bigelli, 2017; Bi et al., 2017; Courtney et al., 2017; Kunz et al., 2017; Lagazio and Querci, 2018; Shahab et al., 2019), the number of words within the project description (Moy et al., 2018; Koch and Siering, 2019; Lelo de Larrea et al., 2019; Yeh et al., 2019; Liang et al., 2020) and the number of comments the project received from the supporters (Kromidha and Robson, 2016; Thies et al., 2016; Butticcè et al., 2017; Clauss et al., 2018; Wang et al., 2018; Lelo de Larrea et al., 2019). Qualitative aspects refer to the professionalism and complexity of the project description

(Chen et al., 2016; Schäfer et al., 2018), the occurrence of spelling errors (Mollick, 2014; Courtney et al., 2017; Chan et al., 2021), and the language used to disclose the information (Pietraszkiewicz et al., 2017; Anglin et al., 2018).

In addition to the mechanisms already presented for communicating the quality of the project, most crowdfunding platforms also offer the possibility of posting updates. These updates represent a unilateral communication element of the project initiator to provide additional information (Clauss et al., 2018) about the campaign or to inform about its progress. Crowdfunding platforms such as Kickstarter and Indiegogo themselves emphasize the importance of this means of communication and advise potential project initiators to provide regular updates (Indiegogo, 2021; Kickstarter, 2021a). The mere presence of updates as well as the number of updates provided during the course of the campaign has already been identified in several studies as a positive factor influencing the success of crowdfunding campaigns (Kuppuswamy and Bayus, 2013; Mollick, 2014; Lagazio and Querci, 2018). However, these quantitative considerations disregard the characteristics of the updates within crowdfunding initiatives. Block et al. (2018) conduct a more detailed study of updates in equity crowdfunding campaigns. They find that certain topics of the updates they investigated, such as campaign and business development, have a positive influence on the success of crowdfunding campaigns. However, the informative value of this study is questionable with regard to a relatively small dataset of 71 crowdfunding campaigns investigated. In addition, equity crowdfunding and reward-based crowdfunding differ in terms of the motivation to invest and the risk associated with the investment (Mamonov and Malaga, 2020). Belleflamme et al. (2014) address this aspect by comparing the suitability of reward-based and equity-based models depending on financing needs and market potential. They conclude that the reward-based approach in contrast to the equity-based approach is more suitable for projects that require a relatively small amount of capital and have higher market potential. These aspects are also addressed by Block et al. (2018), leading them to motivate the conduction of a more detailed study of updates in the context of reward-based crowdfunding initiatives.

4.3 Theoretical background and hypotheses development

To address the still insufficient degree of relevance of updates in the context of reward-based crowdfunding campaigns (Block et al., 2018), this study conducts a detailed investigation regarding three characteristics of updates. First, this study examines the structural properties of updates. This part of the investigation is primarily motivated by the findings of previous research regarding the structure and presence of specific constructs, such as the descriptive text of the campaign, and the use of media in the form of videos and images. Second, we examine the type of communication used by the project initiators within the updates. This part of the study is also primarily motivated by insights into the language used in the description text of crowdfunding campaigns. Finally, we examine the updates of crowdfunding initiatives in terms of their addressed content. This part of the study is primarily based on insights from research on traditional financing of young companies, such as venture capital and business angel financing (e.g. Mason and Harrison, 1996; Aspelund et al., 2005).

In line with current crowdfunding literature (e.g. Ahlers et al., 2015; Courtney et al., 2017; Parhankangas and Renko, 2017; Vismara, 2018), this study is based on signal theory (Spence, 1973, 1974, 2002). Signal theory addresses the situation of two parties having access to different information due to market imperfection (Kortleben and Vollmar, 2012), thus creating a state of information asymmetry. In order to reduce these existing information asymmetries, the sending party pursues the goal of credibly communicating the quality of the object of interest, which is difficult or impossible for the recipient to interpret, by providing signals (Spence, 2002). In terms of the financing process, these signals lead in the best case to an increase in the likelihood of an investment decision by the recipient (Morris, 1987; Connelly et al., 2011). The relevance of signaling has already been investigated in studies of traditional finance (e.g. Jaaskelainen et al., 2006; Schwienbacher, 2007; Cosh et al., 2009), but it is particularly relevant in crowdfunding, as the individuals of the crowd usually have a less pronounced financial sophistication as business angels or venture capitalists (Freear et al., 1994). Due to this circumstance, online platforms such as Kickstarter act as crowdfunding intermediaries and offer the project initiators various possibilities to present the project in order to reduce information asymmetries and to strengthen trust in the quality of the project (Greiner and Wang, 2010).

Prior research has looked at a variety of these opportunities and their characteristics as signaling effects to increase the potential for the success of crowdfunding initiatives. In this study, we investigate what characteristics the updates provided by project initiators must have in order to function as a unilateral signal (Kromidha and Robson, 2016) to lead to an increase in the likelihood of success.

4.3.1 Structural characteristics of updates in crowdfunding

Information plays a crucial role in the decision-making process of individuals (Moy et al., 2018). For example, research shows that online reviews with longer texts and thus the provision of relatively more information is considered more useful by readers (Mudambi and Schuff, 2010). However, there is also evidence that too much information can result in difficulties in terms of interpreting the information. Regarding the individuals' level, for example, represented by a potential investor, this means that the individual can no longer distinguish between relevant and irrelevant information and instead has to resort to heuristics or hasty conclusions in order to make his or her decision (Moy et al., 2018).

Past crowdfunding research has dealt extensively with the phenomenon of information overload and has already identified numerous findings regarding this circumstance (e.g. Kim et al., 2016). The description text of crowdfunding campaigns, which serves as one of the most central elements for disclosing information, has mostly been used as an investigative object. Moy et al. (2018) examine the effect of excessive information in the description texts of crowdfunding campaigns on Kickstarter. They find that the length of the project description text has a positive significant effect on both the funds raised and the number of backers. However, their study also shows that the proven relationship is not strictly linear, but rather an inverted u-shaped relationship. The proven effect of the inverted u-shaped relationship remains present across all categories of Kickstarter campaigns (e.g. Technology, Design, and Games). In other words, this means that there is an optimal number of words for the description text of the campaigns. However, this number of words differs within the considered categories. Both Koch and Siering (Koch and Siering, 2019) as well as Liang et al. (2020), identify similar results in their studies. Based on the studies regarding the correlation between the

length of the description text and the success of crowdfunding initiatives, it can be assumed that updates in the context of crowdfunding campaigns also have an optimal number of words. We therefore assume an inverted u-shaped relationship between the length of the updates and the influence on the success of crowdfunding initiatives. Following this argumentation, we consider the hypothesis:

Hypothesis 1a (H1a): *“The overabundance of information within updates negatively affects crowdfunding success”*

The use of media and its influence on the success of crowdfunding campaigns is another relevant part of the research in this field. Crowdfunding platforms offer project initiators the opportunity to make videos and images available as part of the campaign description. In this context, the platforms themselves sensitize the project initiators to provide a video as part of the campaign, as these tools represent the best way to introduce oneself and the project (Kickstarter, 2021b). Early findings from the fields of psychology and marketing found that enriching textual information with images and videos facilitates the retrieval of received information (Paivio and Csapo, 1973; Durso and O’Sullivan, 1983; Liu and Stout, 1987). These findings can be replicated in the context of product presentations on online websites (Blanco et al., 2010). With regard to the presentation of projects on dedicated crowdfunding platforms, studies have come to the conclusion that the integration of media such as images and videos has a positive influence on the success of the project (e. g. Mollick, 2014; Colombo et al., 2015; Butticiè et al., 2017; Courtney et al., 2017; Parhankangas and Renko, 2017; Anglin et al., 2018; Liang et al., 2020). Videos and images thus represent another way to reduce information asymmetries and signal project quality (Courtney et al., 2017). In an experiment, Mollick and Nanda (2016) show that the assessment of project quality differs between experts and the crowd. Accordingly, projects that were positively assessed by experts but were not successfully funded had a significantly lower number of images and videos than successful projects. With regard to the results already obtained concerning the use of media in the context of crowdfunding description texts, the question arises as to how far the use of media also represents a relevant element in the updates

provided for these same campaigns. With regard to the uniformity of the literature, in which the use of media is mostly shown to have a positive influence on the success of crowdfunding campaigns, we assume that there is also a positive correlation between the use of media in the context of updates and the probability of success of crowdfunding campaigns. For this reason, we hypothesize the following:

Hypothesis 1b (H1b): *“The number of images used in updates has a positive impact on the success of crowdfunding campaigns.”*

Hypothesis 1c (H1c): *“Providing a video as part of updates has a positive impact on the success of crowdfunding campaigns.”*

Findings from psychology show that the impression about another person's face is formed quickly and this impression rarely changes in the further course (Willis and Todorov, 2006). A similar effect can also be observed in the evaluation of objects. For example, users decide within 50 milliseconds whether they have gained a positive impression of a website or not (Lindgaard et al., 2006). The first impression also plays a relevant role in the communication of messages. News headlines, for example, have the ability to influence currency exchange rates (Peramunetilleke and Wong, 2002). Furthermore, research shows that the titles of newspaper articles influence both the lasting impression of what is read and the amount of reading. Dor (2003) conclude in their study that newspaper readers tend to skim the titles of the newspaper rather than read the entire article.

Crowdfunding platforms like Kickstarter and Indiegogo structure the updates provided by the project initiators in a separate section within the project. This includes the title, a short preview of the content of the update, as well as information about the date, like, and comment count. In order to read an update in full, the interested person has to click on the corresponding update, which takes them to the update itself via the link. These insights concerning headlines and titles assume that the presence of a content-related title of the updates provided is a relevant aspect of the structure of updates. Furthermore, we assume that the use of a content-related title creates a positive first impression of the update and that, as a result, the update has a greater influence on the

likelihood of success of the campaign than updates that do not have a content-related title. Following this argumentation, we come to the following hypothesis:

Hypothesis 1d (H1d): *“The presence of a content-related title has a positive impact on the success of crowdfunding campaigns.”*

Milgrom (1981) examines the effect of good and bad news. In general, a seller initially discloses more favorable news to buyers and withholds less favorable information. If the buyer recognizes the withholding of information, he assumes this information is characterized by unfavorable content. Therefore, the best strategy for the seller is to disclose all relevant information he possesses.

Within the context of crowdfunding, Koch and Siering (2019) examine the influence of information disclosure on crowdfunding success. According to this study, the communication of risks is an important signal for reducing uncertainty, because project creators thereby show transparent disclosure of information. The communication of information and risks thus helps to build trust and accordingly has a significant, positive influence on project success.

Project creators have the option of marking updates as visible only to supporters. This means that the content of these updates is not visible to future, potential supporters who still need to be convinced. Based on the evidence to date regarding the disclosure of information, potential investors in crowdfunding campaigns may interpret the concealment of updates as a negative signal, because they may assume that the content contains negative information about the project. In this case, hiding updates would have a negative effect on the success of a crowdfunding project. Following these considerations, we formulate the last hypothesis regarding the structural character of updates:

Hypothesis 1e (H1e): *“An increased ratio of hidden updates has a negative impact on the success of crowdfunding campaigns.”*

4.3.2 Content of updates in crowdfunding

As the decision to invest in a new venture is associated with risk (Busenitz et al., 2005), literature in entrepreneurial finance in recent years has focused extensively on identifying the decision-making criteria of traditional financiers (Maxwell et al., 2011). Since a large proportion of new companies focus on business angels and venture capitalists in their search for financial resources (Bergemann and Hege, 1998; Sudek, 2006; Schwienbacher, 2007; Lukkarinen et al., 2016), research on the decision-making criteria of these two parties with regard to an investment has become particularly important. As the relationship between traditional investors and the new venture is also fraught with information asymmetries between the parties, research in this area has also looked at signals that can be provided by the new venture to potential investors to convey its credibility (Morris, 1987; Janney and Folta, 2003; Busenitz et al., 2005). With regard to the decision-making process for these types of investors, four characteristics of the company to be financed have emerged, among others, to which investors pay particular attention.

First, business angels and venture capitalists look at characteristics relating to the underlying product or service that the new venture offers. These aspects include the stage of development of the underlying product or service (Bachher and Guild, 1996; Mason and Harrison, 1996; Becker-Blease and Sohl, 2015), the degree of innovation of the product or service (Bachher and Guild, 1996; Mason and Stark, 2004; Dutta and Folta, 2016), its uniqueness and differentiation from competing products (Hall and Hofer, 1993; Mason and Harrison, 1996; Stedler and Peters, 2003) as well as its competitiveness (Bachher and Guild, 1996; Stedler and Peters, 2003).

Second, the majority of research in the field of entrepreneurial finance agrees that the characteristics of the founder or the entrepreneurial team are the most important decision-making criteria for business angels and venture capitalists (Lukkarinen et al., 2016). In relation to the founder and the entrepreneurial team, the team size (Mason and Harrison, 1996; Aspelund et al., 2005; Becker-Blease and Sohl, 2015), previous experience in relation to specific industries (Mason and Harrison, 1996; Van Osnabrugge, 2000; Becker-Blease and Sohl, 2015; Carpentier and Suret, 2015) as well as managerial (Feeney et al., 1999; Colombo et al., 2007; Carpentier and Suret, 2015) and entrepreneurial (Aspelund et al., 2005; Hsu, 2007; Carpentier and Suret, 2015)

experience play an important role. In addition, studies show that the heterogeneity of the individuals' complementary skills and background within the team (Feeney et al., 1999; Mason and Stark, 2004; Aspelund et al., 2005; Sudek, 2006), as well as the presence and the capability of presenting a dedicated vision (Feeney et al., 1999), entrepreneurial passion (Chen et al., 2009) and the ability to inspire and suggest trustworthiness (Stedler and Peters, 2003; C. R. Mitteness et al., 2012; Maxwell and Lévesque, 2014) can have a positive impact on the investment decision.

Third, traditional investors look at the business viability of the underlying company. This can be evaluated by the market potential or the growth potential of the market (Bachher and Guild, 1996; Stedler and Peters, 2003; Mason and Stark, 2004; Maxwell et al., 2011). Furthermore, the number or existence of patents has established itself as a proxy for the maturity of a company (Colombo et al., 2007; Häussler et al., 2011).

And fourth, financing aspects of the new venture represent a further decision criterion for business angels and venture capitalists. These aspects include the ratio of equity financing of the entrepreneur or the entrepreneurial team to the total capital of the company (Stedler and Peters, 2003; Colombo et al., 2007), as well as information regarding the previous financing from external sources (Fiet, 1995; Hsu, 2007; Becker-Blease and Sohl, 2015). Additionally, traditional investors also pay attention to realistic financial projections of the underlying founder (Mason and Harrison, 1996; Feeney et al., 1999).

In summary, various specific topics can be identified that are of increased relevance for the decision-making process of traditional financiers. This suggests that, with regard to crowdfunding initiatives, the explicit addressing of specific topics through textual aspects in the context of the project presentation can have an influence on the success of these initiatives (Koch and Siering, 2019). Investigating 383 projects from Kickstarter in terms of their textual and visual presentation, Allison et al. (2017) find that both entrepreneur-specific and product-specific issue-relevant information are positively related to crowdfunding performance. Furthermore, Mamonov and Malaga (2020) examine 133 projects from a total of 16 equity crowdfunding platforms. Reviewing the project description and descriptive data, they find that projects whose product development process has already been completed have a higher probability of success in equity crowdfunding campaigns than their peer projects still being in the prototype stage. The

size of the founding team also has a positive significant influence on success; furthermore, it has a negative effect on success if the founding team consists of only one founder. Based on information from the company behind the crowdfunding campaign, they find that the presence of patents does not have a significant impact on the success of crowdfunding campaigns. Finally, Mamonov and Malaga (2020) find that prior funding from business angels and venture capitalists can also have a positive significant impact on the success of equity crowdfunding initiatives. This aspect is also taken up by Chan et al. (2020) investigating daily funding data of 333 projects on Kickstarter. Their results show that high amounts of prior funding attract higher amounts of subsequent daily funding. They also demonstrate that entrepreneurial passion in the video pitches of the projects has a moderating effect on the relationship between prior funding and subsequent daily funding.

These studies have in common that they all examine the general presentation of the projects, in the form of the textual description or the visually perceivable appearance of the project initiators in the form of a video pitch. This circumstance is addressed Block et al., (2018) examining the updates of equity crowdfunding campaigns for their addressing of specific content. Their results show that information concerning the campaign development, new funding, business development, and cooperation projects positively influence crowdfunding performance.

Since crowdfunding has established itself as a viable alternative for raising capital for new companies (e.g. Clauss et al., 2018; Mastrangelo et al., 2019), the question arises as to what extent the findings from the research on traditional financing can also be applied to crowdfunding. Both sources of financing share similarities as well as differences (e.g. Wilson and Testoni, 2014; Hornuf and Schwienbacher, 2016). Regardless, they pursue the same goal of meeting the financial needs of growing companies. For this reason, traditional sources of financing and crowdfunding are often considered together and compared within the literature in entrepreneurial finance (Lukkarinen et al., 2016). Despite the research of Block et al. (2018), the study of specific information disclosure in the context of crowdfunding campaign updates proves to be still insufficiently researched. Although Block et al. (2018) conclude that relevant content in updates can have a positive impact on the success of crowdfunding campaigns, their study relates both to a relatively small sample and exclusively to equity crowdfunding. Due

to the different underlying motivations and risks (see Mamonov & Malaga (2020) and Lukkarinen et al. (2016) for a detailed comparison of the characteristics of different crowdfunding forms and the comparison of traditional funding sources and crowdfunding, respectively), equity and reward-based crowdfunding platforms attract different types of investors (Belleflamme et al., 2014). It has been argued that while supporters in reward-based crowdfunding are predominantly, but not exclusively, driven by intrinsic motivation, as they like and want to support projects (Schwienbacher and Larralde, 2012), in equity-based crowdfunding extrinsic financial motivations prevail (Collins and Pierrakis, 2012). Due to this circumstance, recent literature originated from the field of entrepreneurial finance motivates to conduct a study using a larger data set and also in the context of reward-based crowdfunding (Block et al., 2018; Koch and Siering, 2019).

However, there is also empirical evidence that in both equity-based and reward-based crowdfunding, the financial motivation of potential investors plays the primary role, and non-financially motivated aspects such as willingness to support play only a secondary role (Cholakova and Clarysse, 2015). This in turn increases the comparability of reward-based crowdfunding to traditional sources of financing such as business angels and venture capital, whose interest with regard to an investment is a lucrative exit in the form of a satisfactory return as the central investment motivation (e.g. Sudek, 2006; Espenlaub and Khurshed, 2014). In summary, these aspects motivate the investigation of specific content in updates in reward-based crowdfunding, on the one hand by comparing reward-based crowdfunding to traditional funding sources, and on the other hand to expand knowledge regarding the differences between investors of both equity and reward-based crowdfunding. Accordingly, we conclude the following hypotheses:

Hypothesis 2a (H2a): *“An increased proportion of updates within a campaign that addresses issue-relevant information regarding the product lead to an increase in the success of crowdfunding campaigns.”*

Hypothesis 2b (H2b): *“An increased proportion of updates within a campaign that addresses issue-relevant information regarding the entrepreneurial team lead to an increase in the success of crowdfunding campaigns.”*

Hypothesis 2c (H2c): *“An increased proportion of updates within a campaign that addresses issue-relevant information regarding business information lead to an increase in the success of crowdfunding campaigns.”*

Hypothesis 2d (H2d): *“An increased proportion of updates within a campaign that addresses issue-relevant information regarding financing aspects lead to an increase in the success of crowdfunding campaigns.”*

4.3.3 Community engagement

Crowdfunding enables new forms of social interaction that can give potential investors a sense of belonging to a community with similar interests and thus motivates them to invest in the project (Gerber et al., 2012). Building a vibrant community that supports the entrepreneur, on the one hand, and offering community benefits to the crowd, on the other, are key requirements for crowdfunding to be a viable alternative to traditional funding sources (Belleflamme et al., 2014). Recent crowdfunding literature, therefore, sensitizes project initiators to actively interact with the community (i.e. potential backers) using the available mechanisms of crowdfunding platforms such as Kickstarter (Wang et al., 2018). By doing so, project initiators can leverage crowd-based knowledge (Bayus, 2013; Dahlander and Piezunka, 2014; Piezunka and Dahlander, 2015) by utilizing the ideas and suggestions of the community, thus giving the crowd the opportunity to have an influence on the development of the project. Involving the crowd thus offers benefits for the underlying project that goes beyond the mere provision of financial resources (Cornelius and Gokpınar, 2020). One way of involving the crowd is the comment function on crowdfunding platforms. Here, apart from their own projects, project initiators can also act as part of the community by being recipients of suggestions in their role as project creators on the one hand, and acting as supporters of other pro-

jects on the other, thus becoming senders of suggestions themselves. Both types of participation in the community, which can be defined as “*internal social capital*” (Butticè et al., 2017, p. 184) in the context of crowdfunding, have the potential to increase the probability of success of crowdfunding initiatives (Butticè et al., 2017). The use of specific language can also strengthen the relationship between project initiators and the crowd by conveying a sense of community. Allison et al. (2017) demonstrate that communication that does not focus on the project initiator themselves, but suggests to the crowd that they can become a part of the team and achieve the success of the project together, can have a positive impact on crowdfunding initiatives. In addition to the project presentation’s characteristics, Colombo et al. (2015) demonstrate that certain rewards that enable social interaction with project creators or include the offering of merchandise can foster a sense of belonging to the community and thus increase the likelihood of success of a crowdfunding initiative.

These findings show the importance of community engagement, especially in the context of (reward-based) crowdfunding. Project initiators have the opportunity to actively influence this engagement, for example, by using language that conveys a sense of community. Therefore, in the context of this study, we would also like to investigate how the community can be involved in the course of the project through regular updates, for example by requesting feedback. We, therefore, use an exploratory approach (Block et al., 2018) to investigate the open research question within this study: “*What aspects of community engagement in updates have a positive impact on the success of crowdfunding campaigns?*”

4.4 Methodological approach and data

To answer our hypotheses, as well as the open research question within this study, we use data from the online crowdfunding platform Kickstarter. Kickstarter is currently the largest online crowdfunding platform (Taeuscher et al., 2020), where over 200,000 projects have already been successfully funded by backers in a total of 15 categories (i.e. technology, design, photography, comics) with a total of over 5.7 billion dollars (Kickstarter, 2021e).

For this study, we focus on the two categories of design and technology. This is done for various reasons. First, the approach of selecting individual categories from the entire

variation of categories on Kickstarter represents a valid and common practice in research (e. g. Calic and Mosakowski, 2016; Courtney et al., 2017; Parhankangas and Renko, 2017; Stanko and Henard, 2017). Second, projects in the Technology, Games, and Design categories most resemble traditional entrepreneurial activity, thus providing a solid basis for subsequent start-up activity (Parhankangas & Renko 2017). Third, in recent crowdfunding literature, the categories of Design, and Technology are often combined into one main category and considered together (Mollick, 2014; Courtney et al., 2017; Gafni et al., 2019). And fourth, Kickstarter also combines the two categories into the superordinated category “Design & Technology” on its website (Kickstarter, 2021c). A specially developed algorithm using the python programming language was used to collect the data from the Kickstarter website (e.g. Calic and Mosakowski, 2016). This procedure was carried out between June 2020 and September 2020 and resulted in the collection of all publicly available projects on Kickstarter of these two categories between 2009 and 2020, resulting in 18,466 projects from the design category, as well as 29,297 projects from the technology category. In the next step, we reduced this initial population of Kickstarter data due to several reasons. First, we exclude all projects that didn't either show a successful or unsuccessful status (i.e. canceled). Second, Kickstarter operates as a crowdfunding platform under the "all-or-nothing" principle. This means that the project initiators only receive the amounts donated by the supporters if a funding goal defined in advance by the project initiators themselves has been reached (Cumming et al., 2020). Since the amount of the funding goal on Kickstarter varies greatly among the projects and this is associated with different prospects of success, we set both a lower limit and an upper limit of the funding goal for the dataset of this study. A funding goal of USD 5,000 is set as the lower limit, as funding goals at or above this volume give crowdfunding initiatives greater comparability with traditional funding sources such as business angel and venture capital financing (Calic and Mosakowski, 2016). In order to take seriousness of the projects into account, an upper funding goal of USD 1 million is set, as projects that use crowdfunding initiatives to raise funding beyond this limit show a questionable seriousness of their efforts (Mollick, 2014). Third, in order to exclude cultural aspects, only projects whose origins could be traced back to the USA are examined (Allison et al., 2017). Fourth, we eliminate all projects that, despite the fact that Kickstarter is reward-based crowdfunding, did not have explicit

rewards in their project presentation. And fifth, as a final step, since in the context of this study the object of investigation is the updates of crowdfunding projects, all projects that did not have at least one update are eliminated.

This results in a population of crowdfunding projects consisting of 4,903 projects from the design category, and 6,044 projects from the technology category. From this resulting population, we draw a subsample of 500 projects per category. First, these resulting projects were checked for completeness and usability. On the design project side, the information of eleven projects contained errors, 28 projects had at least one update, but not within the project duration, and 21 projects contained only projects visible to supporters. This results in a total of 439 projects from the design category. On the technology projects side, one project was marked as no longer visible by the project initiator, and nine other projects were incorrect. Furthermore, 12 had no update within the lifetime of the project and eight projects were afflicted with updates exclusively visible to the supporters. This resulted in a total of 470 projects in the technology category. Thus, we use a dataset from Kickstarter projects with a total of 909 observations as part of this study. This size of our dataset is comparable to recent crowdfunding literature (e.g. Colombo et al., 2015; Liao et al., 2015; Parhankangas and Renko, 2017; Wang et al., 2018; Zhang and Chen, 2019). To ensure the representation quality of our subsample relative to the population of our dataset, we conducted two-tailed t-tests comparing the population and the subsample using a wide range of variables (e.g. Calic and Mosakowski, 2016; Allison et al., 2017). This procedure ensured that the selected subsample did not significantly differ from the population in terms of project duration ($p=0.86$ for design projects; $p=0.48$ for technology projects), number of backers ($p=0.76$; $p=0.71$), number of rewards ($p=0.74$; $p=0.88$), number of images in the project description ($p=0.26$; $p=0.72$), number of videos in the project description ($p=0.79$; $p=0.54$), funding goal ($p=0.63$; $p=0.54$), money raised ($p=0.95$; $p=0.84$), percentage of successful projects ($p=0.45$; $p=0.88$), number of comments ($p=0.98$; $p=0.84$) and number of updates ($p=0.48$; $p=0.62$).

4.4.1 Dependent variable

Since Kickstarter follows the 'all-or-nothing' model, in which project initiators receive the donated amounts only after reaching the funding goal (Cumming et al., 2020), exceeding this funding goal is crucial and represents a salient performance indicator for crowdfunding initiatives (Anglin et al., 2018). Our dependent variable, therefore, measures the achievement of this funding goal throughout the campaign as the dichotomous variable "projectsuccess", which takes the value 1 if the project achieved the funding target and was therefore successfully funded, and takes the value 0 if this did not occur. This variable has been used in several crowdfunding studies examining the performance of crowdfunding initiatives (see Liang et al., 2020 p. 19-32).

4.4.2 Independent variables

The independent variables of this study refer to the structural characteristics of the updates published in the context of crowdfunding campaigns on the one hand and to their thematic content on the other. The data used to investigate the underlying hypotheses were partly collected automatically by the web crawler, or obtained by manual coding. In line with recent crowdfunding literature investigating the effect of overabundant information within the project description of crowdfunding campaigns (e.g. Moy et al., 2018; Liang et al., 2020), we measure the number of words used per update. For this purpose, the updates were first cleaned of URLs, e-mail addresses, and special characters such as repeated hyphens or underscores (e.g. Pietraszkiewicz et al., 2017). To aggregate this information at the project level, we summed the words used in all updates throughout a campaign and divided them by the number of updates used over the duration of the campaign. This resulted in the variable "wordcount". In addition, we collect the squared term of this wordcount aggregated to the project level by the variable "wordcount_2".

To capture the influence of topic-related titles, manual coding per update was necessary. This was conducted using the software "MAXQDA", which is an appropriate software when analyzing qualitative data (e.g. Bömer and Maxin, 2018). From the 909 crowdfunding campaigns examined, a total of 4,082 updates resulted, which were manually examined with regard to the content-related title. To again aggregate this on a project level, the number of updates that had a topic-related title was determined and

divided by the total number of updates within the campaign period. This approach resulted in the variable "*title*", representing the percentage of updates during the duration of a campaign that possessed a content-related title.

To investigate the influence of media use (images and videos) in updates, two variables were constructed. First, the variable "*images*" contains the average number of images that were included per update within a campaign. Second, it was determined whether an update was made available via a video as part of an update. This information was then aggregated back to the project level. This resulted in the variable "*video*", which measures the percentage of updates over the lifetime of a campaign that had a video. Finally, to examine the effect of information that is not generally available, we determine the percentage of updates over the life of a campaign that were only visible to the group of people who already supported the project. Finally, to examine the effect of information that is not generally available, we determine the percentage of updates over the life of a campaign that were only visible to the group of people who already supported the project. This resulted in the variable "*hidden*".

In order to examine the content of the updates in relation to criteria derived from research on traditional funding sources (hypothesis 3a-3d), we also conducted a coding scheme utilizing MAXQDA. First, all 4,082 updates from the 909 campaigns examined were loaded into the software. Then, all updates were read by the two coders and examined with regard to their addressing of the topics "product," "team," "business," and "funding". If an update contained information on the relevant topics, this was indicated in MAXQDA by setting a "tag" related to the topic. For example, an update was given the tag "product" if it contained additional information about the features of the product or the way it is used. An update was tagged "team" if it contained information about the team, such as its composition, background information about the team members, or an announcement that new team members had been hired.

The tag "business" was assigned when, for example, project initiators disclosed information about the company behind the campaign. the launch of a website or the opening of a physical store, as well as information regarding patent applications, fell under this category. Finally, the tag "finance" was used to record information that dealt with financing-specific topics outside the crowdfunding campaign. This included, for example,

information on other sources of financing such as business angels. Table 14 contains sample content from the updates and their coding with respect to the four categories.

To address our open research question, a coding system for the categorization of the community-related content addressed in each update was developed. This coding system was evaluated and expanded several times in an iterative and inductive process in order to cover all relevant content of the updates in terms of community-relevant aspects. In a final step, similar categories were combined. The variety of community-related topics addressed by the project initiators in the updates led to a final coding system consisting of the following 8 categories: *Status Update*, *Crowd Appreciation*, *Active Participation*, *Reminder*, *Cross-promotion*, *FAQ*, *Offerings*, and *Rewards added*.

Table 14: Coding scheme examples (Hypothesis 2)

Dimension	Representative excerpt from the content of the updates
Product	<i>"As demonstrated in the video the device can be used for any sport activity and exercise physical therapy. You wear the device while swimming, aerobics, martial arts, Yoga or any activity. The device will enhance your golf swing, baseball swing or tennis swing just to name a few uses. [...]"</i>
Team	<i>"Our Experience of making Quality Products. We have been designing products for LEGO Mindstorms users since it was introduced in early 2000. We have the organization and processes in place to design and manufacture products that satisfy the stringent criteria of Mindstorms users!"</i>
Business	<i>"I'm excited to announce that I will be attending the Pizza Expo in Las Vegas next March. Pizzeria operators are expressing an interest in selling the Slice is Right to their customers, which is awesome feedback! I will head to Las Vegas and hopefully, make some connections and take some orders."</i>
Funding	<i>"We have exciting news to share as we recently learned that we have been awarded a matching grant of \$25,000 through a small business competition. This means that every dollar we generate through our Kickstarter campaign (up to \$25k) will be matched as well."</i>

The *Status Update* category contains information regarding the current status of the campaign itself. This includes information about the achievement of the financing goals, the amount of money raised to date, the number of backers attracted so far and information about the shipment, and a description of the current steps within the project such as work on prototypes. The *Crowd Appreciation* category includes appreciation for backers and highlighting the contribution of backers to the success of the project. The *Active Participation* category contains calls for backers to actively participate. For example, project creators actively ask for feedback, create a survey, or ask backers to share the project on social media and with their friends. The *Reminder category* includes reminding readers how much time is left until the deadline or that only a few rewards from a reward category are still available. The *Cross-promotion* category refers to posting links and recommendations to other interesting ongoing crowdfunding campaigns. Mostly, this is probably a mutual agreement to share each other's projects in a coordinated manner. Whether this has happened in the projects mentioned, however, is not checked here. The *FAQ* category contains on the one hand the notification that new entries have been added to the FAQ section of the campaign. On the other hand, this also covers cases when project creators themselves respond to notes, requests, or questions they have received in the updates. The *Offerings* category includes special reduced or limited offers and referral programs that allow investors to get part of their money back upon successful referral.

Finally, the *Rewards* category contained information on new rewards that has been added by the project initiator in addition to the existing ones. Table 15 shows sample content from the updates and their assignment to the eight categories in the context of the open research question.

4.4.3 Control variables

In order to account for effects that have already been identified as influencing factors on the success of crowdfunding campaigns, we included several control variables regarding the characteristics of crowdfunding projects. Since long set project durations can signal a lack of self-confidence on the part of project creators (Mollick, 2014), the variable *project_duration* is used to control for the project's duration.

Table 15: Coding scheme examples (Open research question)

Dimension	Representative excerpt from the content of the updates
Status update	<i>"Due to very promising results in the first sleep study conducted in May and June 2016, Harvard Medical School asked us to continue to add a Phase 2 of the study with a larger population size that is beginning this week."</i>
Crowd appreciation	<i>"We are so grateful and impressed by the level of support that our community has embraced us with, and these last few days, our community has grown as people who were once strangers generously supported us."</i>
Active Participation	<i>"I'm also looking for feedback on ways that I might be able to improve the project. I've gotten a few notes so far, but I'd like more. Is there something missing that should be included in the project page? Is there something on the page that shouldn't be there? Anything confusing or unclear? Want to know more about packaging? Send me a message here on Kickstarter, or email me at xxx@xxx.com. I'm open to any and all feedback."</i>
Reminder	<i>"The super early bird perk is almost gone. For those who are still sitting on the fence, hurry up to get your spot now."</i>
Cross Promotion	<i>"We'd like to give a shout out to some of our favorite projects on Kickstarter right now- we know you're going to love them!"</i>
FAQ	<i>"You asked so many great questions and we updated our FAQ session. Please review it and let us know if you have any additional questions."</i>
Discounts	<i>"We are also offering a discount for clubs. If at least 5 of your members are looking to get a new helmet, we are offering each at only \$200. That's \$25 less than the Kickstarter reward price (AND you get a patch, our glove tutorial, and your club's logo gets pimped on the Destroyer Modz website and social media pages)."</i>
Rewards added	<i>"We also added a new \$19 reward Tier which is only the base, seal, and one cover. This is for those that want to design their own board, and do not need the proto-board."</i>

Higher funding goals are more difficult to achieve and reduce the chances of success of a crowdfunding campaign (Frydrych et al., 2014; Barbi and Bigelli, 2017; Lagazio and Querci, 2018), therefore this is also controlled for using the variable *project_fundinggoal*. In order to account for the variety of choices as an investment incentive

(Johnson et al., 2018), the variable *project_rewards* is considered, which captures the number of rewards offered. The control variable *project_featured* indicates whether the project is highlighted by Kickstarter staff, reflecting the projects' quality (Roma et al., 2017).

Since entries in the FAQ can signal to potential backers that the project creator wants to make the funding process more transparent (Kunz et al., 2017), the variable *project_faq* controls for the number of published entries in the FAQ section of a project. A positive influence has already been demonstrated on visual project presentation represented by the number of images (Kunz et al., 2017; Xu, 2018; Liang et al., 2020) and the presence of a video (Mollick, 2014; Anglin et al., 2018; Lagazio and Querci, 2018). We, therefore, include the variables *project_images* and *project_video* to control for the number of images and the presence of at least one video in the main project description, respectively. Previous research has shown that the individual categories have systematic differences (Mollick, 2014; Chan et al., 2018), we include the variable *cat_tech* which was equal to 1 if the project originated from the category "Technology" and 0 if it originated from the category "Design". The projects of the final subsample were launched between 2010 and 2020. To control for time effects, we include a binary variable *year_20XX* for each underlying year in this period.

Second, in addition to project-level characteristics, differences in updates could have an impact on the success that is not captured by the independent variables. Consistent research has already shown that the number of published updates has a positive impact on the success of a crowdfunding campaign (Mollick, 2014; Kromidha and Robson, 2016; Block et al., 2018; Wang et al., 2018; Shahab et al., 2019). Therefore, the variable *upd_count* controls for the number of updates provided within the funding period. Since projects are more likely to receive contributions on weekdays than on weekends (Kuppuswamy and Bayus, 2017; Roma et al., 2017), updates during the week could also have a greater effect than on weekends. Therefore, the *upd_weekend_perc* variable describes the proportion of updates released on weekends out of all updates within the funding period. On the project level, it is known that the number of comments can increase success (Courtney et al., 2017; Wang et al., 2018; Liang et al., 2020). On the update level, we control for the average number of likes and comments with the variables *upd_likes* and *upd_comments* to be able to consider the quality of the updates. The

financing of crowdfunding is a dynamic process, where daily contributions vary in different phases of a campaign. An initially high level of project support in the first days is followed by decreasing contributions that only increase towards the end of the project duration (Hornuf and Schwienbacher, 2018). Such an effect can be taken into account by coding the first and last seven days of a project separately (Kuppuswamy and Bayus, 2013). To take this dynamic nature of financing in the context of crowdfunding initiatives into account, we include variables `share_updates_t2` and `share_updates_t3`, which indicate the proportion of updates that are published in the middle part and the last seven days, respectively.

4.5 Results

Our dependent variable "success" is represented by a dichotomous variable that takes the value 1 if the volume of capital provided by the supporters exceeds the funding target of the project. Due to this circumstance, we will use binary logistic regression as a statistical approach to investigate our hypotheses. All regressions are calculated using robust standard errors (e.g. Anglin et al., 2018; Cumming et al., 2020). Table 16 shows the descriptive statistics of the underlying sample of our study. The correlations of the sample are summarized in Table 17. Tables 18 and 19 show the results of the logistic regression and the resulting coefficients in relation to the investigation of the structural properties (Hypotheses 1a-1e) and the content of the updates (Hypothesis 2a-2e), respectively. Table 20 shows the regression results for our open research question, regarding the effect of actively addressing the community within the updates. In the regression models 1 to 5, the study conditions of the respective underlying hypothesis are included in the regression. Model 6 then combines the respective variables in a joint logistic regression.

Hypothesis 1a suggests that the provision of excessive information in the context of updates has a negative impact on the success of crowdfunding campaigns. In the course of investigating this hypothesis, we first find a positive significant relationship between the linear term of the number of words in updates and the probability of success of the campaigns ($b = 0.013$; $p < 0.01$). If, however, this linear term is supplemented by the quadratic term of the number of words, it becomes apparent that the quadratic effect also has a significant influence on the success probability of the campaigns, although

this correlation turns out to be negative ($b = -0.001$; $p < 0.01$). Thus, we can find that there is an inverted u-shaped relationship between the number of words in updates and the probability of success of crowdfunding campaigns. The provision of information in updates is therefore only of positive significance for the probability of success of the updates up to a threshold value. Within the framework of our data set, we were able to calculate an optimal value of 261 words.

Table 16: Descriptive findings

Level	Variable	Mean	Std. dev.	Min	Max	Variable	Frequency	% of sample	
Project	duration	35.838	10.016	14	88	Year			
	fundinggoal	42,045.59	60,779.47	5,000	740,000	2010	3	0.33	
	rewards	9.686	5.728	1	74	2011	22	2.42	
	featured	0.169	0.375	0	1	2012	57	6.27	
	faq	3.112	4.990	0	40	2013	89	9.79	
	images	13.336	15.647	0	104	2014	173	19.03	
	video_bin	0.937	0.243	0	1	2015	170	18.70	
	Update	count	4.916	4.032	1	21	2016	116	12.76
		weekend_perc	0.178	0.268	0	1	2017	117	12.87
		likes	4.285	13.388	0	243.375	2018	81	8.91
comments		1.372	4.557	0	78.25	2019	51	5.61	
share_t2		0.201	0.252	0	1	2020	30	3.30	
share_t3		0.471	0.337	0	1				
H1		wordcount	136.337	103.311	0	743	Category		
	title	0.753	0.329	0	1	Design	439	48.29	
	picture	0.757	1.143	0	9	Technology	470	51.71	
	video_bin	0.082	0.201	0	1				
	hidden_perc	0.074	0.160	0	0.8				

Table 16: Descriptive findings (continued)

Level	Variable	Mean	Std. dev.	Min	Max
H2	Product	0.303	0.332	0	1
	Team	0.102	0.203	0	1
	Business	0.197	0.293	0	1
	Funding	0.007	0.059	0	1
ORQ	Status update	0.438	0.366	0	1
	Crowd appreciation	0.517	0.378	0	1
	Active Participation	0.380	0.364	0	1
	Reminder	0.158	0.248	0	1
	Cross-promotion	0.066	0.193	0	1
	FAQ	0.076	0.167	0	1
	Discounts	0.040	0.125	0	1
	Rewards added	0.088	0.178	0	1

In the context of the investigation of the use of media in updates, represented by the use of images (Hypothesis 1b) and the presence of video (Hypothesis 1c), different results emerged. While the number of images used has a positive significant influence on the probability of success of the campaigns ($b = 0.288$; $p < 0.01$), a positive correlation could be proven with regard to the presence of videos, which is, however, not significant ($b = 0.521$; $p > 0.1$). With regard to the examination of content-related titles, we find that a higher ratio of updates that have a topic-related title (Hypothesis 1d) has a significantly positive influence on the success of crowdfunding campaigns ($b = 0.798$; $p < 0.05$). For the last object of study, in terms of structural properties of updates, we find, as suspected, a negative influence on the ratio of updates that were not visible to people who did not support the underlying project (Hypothesis 1e). However, this effect is not found to be significant ($b = -1.102$; $p > 0.1$).

Table 18 - Logistic regression results (Hypothesis 1)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
project_duration	-0.005 (0.012)	-0.006 (0.012)	-0.011 (0.012)	-0.006 (0.012)	-0.005 (0.012)	-0.008 (0.012)
project_fundinggoal	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
project_featured	1.460*** (0.371)	1.515*** (0.373)	1.530*** (0.369)	1.524*** (0.371)	1.561*** (0.371)	1.544*** (0.382)
project_faq	0.122*** (0.035)	0.121*** (0.034)	0.121*** (0.034)	0.126*** (0.034)	0.125*** (0.034)	0.114*** (0.035)
project_images	0.007 (0.009)	0.006 (0.009)	0.003 (0.009)	0.008 (0.009)	0.007 (0.009)	0.003 (0.009)
project_video_bin	1.283 (0.838)	1.289* (0.781)	1.236 (0.770)	1.270 (0.789)	1.367* (0.790)	1.261 (0.825)
project_rewards	0.102*** (0.028)	0.108*** (0.028)	0.103*** (0.028)	0.109*** (0.028)	0.110*** (0.028)	0.096*** (0.029)
upd_updates_in_duration	0.290*** (0.041)	0.291*** (0.041)	0.293*** (0.041)	0.288*** (0.041)	0.297*** (0.042)	0.298*** (0.042)
upd_weekend_perc	-0.039 (0.446)	0.063 (0.441)	-0.058 (0.447)	0.067 (0.440)	0.002 (0.438)	-0.077 (0.460)
upd_likes	0.475*** (0.076)	0.507*** (0.077)	0.522*** (0.077)	0.520*** (0.077)	0.530*** (0.078)	0.471*** (0.077)
upd_comments	0.802*** (0.152)	0.862*** (0.153)	0.833*** (0.151)	0.871*** (0.152)	0.847*** (0.153)	0.742*** (0.152)
share_updates_t2	1.114** (0.484)	1.443*** (0.482)	1.260*** (0.479)	1.344*** (0.474)	1.331*** (0.473)	1.319*** (0.498)
share_updates_t3	0.091 (0.417)	0.183 (0.407)	0.123 (0.407)	0.167 (0.406)	0.149 (0.406)	0.073 (0.423)
Constant	-5.180* (3.142)	-4.816* (2.721)	-3.985 (2.959)	-4.284 (3.035)	-4.256 (2.921)	-5.477** (2.643)
upd_wordcount	0.013*** (0.004)					0.013*** (0.004)
upd_wordcount_2	-0.001*** (0.000)					-0.001*** (0.000)
upd_picture		0.288*** (0.112)				0.225* (0.129)
upd_video_bin			0.521 (0.543)			0.584 (0.571)
upd_title				0.798** (0.379)		0.875** (0.398)
upd_hidden_perc					-1.102 (0.687)	-1.003 (0.727)
Category controls	YES	YES	YES	YES	YES	YES
Year controls	YES	YES	YES	YES	YES	YES
Pseudo R ²	0.6121	0.6036	0.6051	0.6006	0.6020	0.6217
Log likelihood	-244.313	-249.782	-248.829	-251.621	-250.767	-238.327
Observations	909	909	909	909	909	909

Standard errors in parentheses – *** p < 0.01, ** p < 0.05, *p < 0.1

Table 19 - Logistic regression results (Hypothesis 2)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
project_duration	-0.007 (0.012)	-0.008 (0.012)	-0.007 (0.012)	-0.009 (0.012)	-0.008 (0.012)	-0.009 (0.012)
project_fundinggoal	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
project_featured	1.475*** (0.370)	1.437*** (0.370)	1.478*** (0.370)	1.513*** (0.374)	1.502*** (0.375)	1.502*** (0.381)
project_faq	0.124*** (0.034)	0.120*** (0.034)	0.128*** (0.034)	0.129*** (0.034)	0.124*** (0.034)	0.125*** (0.034)
project_images	0.007 (0.009)	0.006 (0.009)	0.006 (0.009)	0.006 (0.009)	0.006 (0.009)	0.005 (0.009)
project_video_bin	1.377* (0.792)	1.375* (0.797)	1.394* (0.776)	1.367* (0.763)	1.359* (0.786)	1.356* (0.756)
project_rewards	0.103*** (0.028)	0.099*** (0.028)	0.104*** (0.028)	0.103*** (0.028)	0.103*** (0.028)	0.100*** (0.029)
upd_updates_in_duration	0.292*** (0.041)	0.298*** (0.042)	0.296*** (0.041)	0.287*** (0.041)	0.292*** (0.041)	0.297*** (0.042)
upd_weekend_perc	0.017 (0.441)	0.070 (0.444)	-0.034 (0.443)	0.110 (0.440)	0.014 (0.440)	0.133 (0.448)
upd_likes	0.499*** (0.077)	0.508*** (0.077)	0.496*** (0.076)	0.510*** (0.078)	0.500*** (0.077)	0.518*** (0.079)
upd_comments	0.828*** (0.153)	0.823*** (0.154)	0.812*** (0.153)	0.831*** (0.156)	0.827*** (0.153)	0.810*** (0.156)
share_updates_t2	1.199** (0.478)	1.051** (0.486)	1.220** (0.481)	1.306*** (0.482)	1.206** (0.479)	1.152** (0.492)
share_updates_t3	0.078 (0.410)	0.082 (0.414)	0.116 (0.412)	0.100 (0.412)	0.073 (0.410)	0.125 (0.420)
upd_wordcount	0.003** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.005*** (0.001)
Constant	-4.429 (3.082)	-4.419 (3.076)	-4.535 (3.125)	-3.918 (3.255)	-4.426 (3.094)	-3.949 (3.363)
prod_tot		-0.731* (0.396)				-0.844** (0.403)
team_tot			-0.988* (0.594)			-0.840 (0.599)
buss_tot				-1.110** (0.444)		-1.054** (0.454)
fund_tot					-0.768 (1.622)	-0.854 (1.627)
Category controls	YES	YES	YES	YES	YES	YES
Year controls	YES	YES	YES	YES	YES	YES
Pseudo R ²	0.6044	0.6071	0.6067	0.6095	0.6045	0.6146
Log likelihood	-249.284	-247.529	-247.798	-246.010	-249.169	-2.428.118
Observations	909	909	909	909	909	909

Standard errors in parentheses – *** p < 0.01, ** p < 0.05, *p < 0.1

Table 20 - Logistic regression results (Open research question)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
stat_tot	1.969*** (0.368)								1.474*** (0.422)
crowd_app_tot		2.107*** (0.390)							1.497*** (0.453)
actpart_tot			0.550* (0.326)						-0.373 (0.390)
rem_tot				2.250*** (0.467)					1.638*** (0.509)
links_tot					1.741** (0.711)				1.559* (0.819)
faq_tot						0.728 (0.650)			0.904 (0.847)
disc_tot							1.298 (0.815)		1.130 (0.967)
rew_tot								0.197 (0.662)	0.385 (0.766)
Full set of controls (project)	YES	YES	YES	YES	YES	YES	YES	YES	YES
Full set of controls (update)	YES	YES	YES	YES	YES	YES	YES	YES	YES
Category controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo R ²	0.6289	0.6303	0.6066	0.6239	0.6095	0.6053	0.6063	0.6044	0.6577
Log likelihood	-233.816	-232.959	-247.869	-2.369.807	-246.037	-248.666	-248.049	-249.239	-215.664
Observations	909	909	909	909	909	909	909	909	909

Standard errors in parentheses – *** p < 0.01, ** p < 0.05, *p < 0.1

Hypothesis 2 examines the addressing of topical issues that have been identified as relevant in the context of traditional financing. Here we find a negative significant effect for both the mention of information related to the product ($b = -0.731$; $p < 0.1$) and for information related to the underlying business ($b = -1.110$; $p < 0.1$). We also find a significant negative effect when mentioning information that deals with the team of the project ($b = -0.988$; $p < 0.1$). However, this effect is no longer significant when all factors are considered in the context of the joint regression (model 6). For the mention of information relating to external funding, we find no significant influence on the success of crowdfunding campaigns in either model ($b = -0.768$; $p > 0.1$).

We utilized the same statistical approach to investigate our open research question, related to addressing aspects related to the community. This resulted in a total of nine regression models, with each including the full set of control variables as for the investigation of hypotheses 1 and 2. Table 20 shows the results of these nine regressions. The logistic regressions revealed that five of the total eight topics investigated have a significant impact on the success of crowdfunding campaigns. These factors include the provision of information regarding the progress of the campaign (status update: $b = 1.969$; $p < 0.01$), community appreciation, for example through thank-you notes (crowd appreciation: $b = 2.107$; $p < 0.01$), reminders about the expiration of the campaign (reminder: $b = 2.250$; $p < 0.01$), the reference to projects of other initiators on the crowdfunding platform (cross-promotion: $b = 1.741$; $p < 0.05$) as well as the call for active participation by the crowd (active participation: $b = 0.550$; $p < 0.1$). However, when all factors are included in a joint regression, the effect of the call for active participation is no longer significant. Neither mentioning new entries in the project's FAQ, advertising specific offers of the campaign, nor mentioning additional rewards shows to be statistically significant in terms of impact on crowdfunding campaign success.

4.6 Discussion

Within this study, we identify characteristics of updates provided during the campaign that represents an effective design of communication and thus can act as a unilateral signal (Kromidha and Robson, 2016) to increase the likelihood of success of crowdfunding initiatives. To answer this research question, structural and content characteristics, as well as community engagement through updates, are examined. The study provides further evidence that crowdfunding differs from traditional funding sources. In addition, the study can contribute to research by comparing appropriate communication in the form of updates within the different types of crowdfunding, in this context between equity- and reward-based crowdfunding.

First, we investigated the structural characteristics of updates. Regarding the number of words used in the project presentation, initial findings show that there is a linear relationship between the number of words and the likelihood of success of crowdfunding campaigns (Ahlers et al., 2015; Bi et al., 2017). Further research extends this body of knowledge by demonstrating an inverted u-shaped influence of descriptive text length on crowdfunding campaign success (Moy et al., 2018; e.g. Liang et al., 2020). Our findings confirm that such an inverted u-shaped relationship also occurs in updates, and thus that providing overabundant information also negatively affects the success of crowdfunding initiatives. We confirm considerations in research on information overload, according to which excessive information can trigger stress and low motivation among information recipients (Eppler and Mengis, 2004).

Regarding the use of media within updates, we find differences between the relevance of images and videos in updates. For project presentation in crowdfunding campaigns, past studies have demonstrated that the use of images and videos has a positive impact on the success of crowdfunding campaigns (e.g. Colombo et al., 2015; Buttice et al., 2017; Anglin et al., 2018; Liang et al., 2020). In this study, while the number of images used in updates has a positive significant effect on success, the effect of the presence of a video is positive but not significant. Past research has argued that the inclusion of video in the project description signals a level of preparation on the part of the project creator (e.g. Mollick, 2014). In terms of updates, the use of videos does not contribute significantly to the success of crowdfunding campaigns. However, crowdfunding research already conducted shows that the presence of a video does not always have a

positive and significant impact on the success of crowdfunding initiatives (Clauss et al., 2018; Cornelius and Gokpınar, 2020). Moreover, the lack of significant influence of videos could also occur since updates and the project description fulfill different roles, and in the context of updates, the provision of videos could play effects of information overload.

For content-based headlines, we demonstrate a positive significant influence on project success. Research investigating the relevance of headlines already argued that newspaper readers scan headlines and use them to select which articles can provide additional relevance to them when they read them in full (Dor, 2003). A similar selection effect of titles could play a role in the context of crowdfunding updates, allowing potential backers to better select information that is relevant to them. In addition, content-based titles could also send a signal of preparation if project creators put in the effort necessary to formulate a content-based title.

The influence of a higher proportion of updates that are not visible to potential supporters showed to be negative as expected, however, we find no significance regarding this effect. Accordingly, Milgrom (1981) argued that decision-makers always assume unfavorable content when information is withheld cannot be generally applied to updates in the context of crowdfunding. Rather, the argumentation of Verrecchia (1983) could apply here that investors are merely uncertain about the advantageousness of the information when information is withheld, but do not automatically interpret it as being disadvantageous for them and do not base their investment decision exclusively on it. This could explain the non-significant influence of the proportion of hidden updates.

Concerning the influence of investment criteria from traditional funding sources, a negative significant relationship is shown for addressing topics related to product and business, while the influence of information related to the founding team and funding is also negative but not significant. The negative influence of topics identified as investment criteria by traditional funding sources such as business angels and venture capitalists could be explained by the fact that addressing these topics in updates signals a lack of preparation. While the topics might be of relevance to potential backers in crowdfunding, they might wish that the project had had a more mature stage of development from the beginning, making it possible to provide these topics in the project

description from the start. Accordingly, instead of publishing such information in updates, it might be more purposeful to update the project description with the newly acquired information. Evidence of these considerations is already provided by Cornelius and Gokpinar (2020), showing that the effect of customer input on the success of crowdfunding campaigns is moderated by the number of changes made to the project description.

These results show that investment decision criteria from traditional funding sources do not necessarily translate to reward-based crowdfunding initiatives. Lukkarinen et al. (2016) also come to similar conclusions in the area of equity-based crowdfunding, which again points to general differences from crowdfunding as a financing instrument to other financing sources, making crowdfunding a unique form of capital raising with different processes and goals (World Bank, 2013).

In contrast to the investigation of content related to traditional funding (Hypothesis 2), the results of the open research question regarding the active addressing and involvement of the community show a significantly different character. We find that topics concerning the provision of information on the current progress of the campaign, appreciation of the support experienced by the community, reminders of the time remaining to support, referencing other projects within the crowdfunding platform, and calling on the active participation of the crowd to have a significant influence on crowdfunding success when addressed in updates.

It has already been assumed in the literature that supporters of crowdfunding feel more comfortable regarding their investment if they feel that they are included in the project and can help others, respectively that their help is also valued (Brabham, 2010; Buettner, 2015; Calic and Mosakowski, 2016). The results of this study confirm these assumptions and show that a variety of ways to engage supporters and actively communicate with the crowd are not only available but can be of great value in increasing the likelihood of success of crowdfunding campaigns. Thus, these findings are consistent with the findings of Cornelius and Gokpinar (2020), showing the role of customer participation within crowdfunding campaigns and its impact on success.

In summary, updates in the context of reward-based crowdfunding have a great potential for signaling and can thus influence the success of crowdfunding campaigns. Updates should by no means be used to compensate for the immaturity of the project. Rather, they should be perceived as an opportunity to convince still hesitant supporters of the quality of the product or the capabilities of the project initiator and to be able to reduce information asymmetries even during the campaign duration. In addition, active communication can leverage the full potential of crowdfunding by providing project creators with early feedback on their projects, for example, by calling for active participation through surveys, thus increasing the quality of the project itself (Mastrangelo et al., 2019).

4.7 Limitations and future research

The contribution of this empirical study to the research should be seen in the awareness of the limitations at hand. Even though the two coders developed the coding system together and later marked and discussed unclear classifications, the coding has a subjective character. Thus, it was also not possible to check the reliability of these classifications. Future research could, for example, increase the number of coders to ensure that content is coded by at least two people. Interrater reliability could then be determined to reduce the dependence on the subjectivity of coding (Tinsley and Weiss, 2000).

Another limitation of the categorization with respect to the decision criteria used in traditional financing is the granularity of the categories. For example, information about the product could be further divided into product features, product usage cues, and a description of superiority/differentiation from competing products. In addition to the four decision criteria studied from traditional funding, research has shown that business angels and venture capitalists pay attention to additional criteria. For example, investors pay attention to the match between their own background and the investment opportunity (Mason and Stark, 2004) and the communication of personality traits of the founders such as honesty, openness, trustworthiness, and the founders' intention to act on advice (Feeney et al., 1999; Mason and Stark, 2004; C. Mitteness et al., 2012; White and Dumay, 2018).

Consistent with these considerations, past research in the context of crowdfunding has shown that conveying personality traits such as narcissism (Butticè and Rovelli, 2020) and communication styles such as using prosocial language (Pietraszkiewicz et al., 2017) and precise language (Kim et al., 2016; Parhankangas and Renko, 2017), as well as communicating a high level of psychological resources (Anglin et al., 2018) have an impact on the success of crowdfunding campaigns. Therefore, we encourage future research to further investigate the influence of communication style via the language used in updates.

Especially considering the dynamic nature of crowdfunding campaigns and the different funding contributions at different stages of the campaigns (Kuppuswamy and Bayus, 2013; Hornuf and Schwiendbacher, 2018), the effect of individual updates could vary over the funding period. Since the information regarding project-level updates is aggregated for the study and no data is available in this study on daily funding contributions, it was not possible to differentiate whether updates were published before or after the funding goal was reached. For these reasons, future studies should include these aspects by examining the impact of updates on subsequent daily funding contributions, noting whether different types of updates at different stages of the funding period have a different impact on the success of a crowdfunding campaign.

4.8 Conclusion

The results of this study provide empirical evidence regarding the relevance and potential of updates as a further signal to mitigate information asymmetries and thus increase the likelihood of successfully launching a crowdfunding campaign. In particular, this study provides deep insights into what information should be disclosed in crowdfunding campaigns to convince still hesitant supporters of the quality of the underlying project. In particular, it shows that involving and actively addressing the community through updates has a particularly high potential to strengthen the success of crowdfunding campaigns. From a theoretical point of view, therefore, this study makes a further contribution to the now highly developed body of knowledge of signal theory and once again highlights the relevance of this theory with regard to financing projects for entrepreneurial ventures. From a practical point of view, project initiators should take these insights into account in the formulation of updates themselves, but also take care in the

initial formulation of the campaign to provide the right information so as not to signal to potential backers an unfinished or unprepared impression of the underlying product or the inadequate skills of the project initiators. crowdfunding platform operators should also highlight the potential for updates over the life of the campaign. Taking these factors into account, updates can be used optimally as a means of communication, thus increasing the campaign's likelihood of success and helping to bring new products and services to life that make our everyday lives that little bit easier, safer, or more interesting.

5 Overall Conclusion and Contribution

Entrepreneurial activity is a dynamic process that involves various stages and usually starts with the potential entrepreneur experiencing a certain intention for these activities (Davidsson, 2005). Despite intensive research in the field of entrepreneurship in recent decades, research has proven limited in terms of a broader focus beyond just one of the stages of the entrepreneurial process (Brixy et al., 2012). However, a broader view of entrepreneurial research is of critical relevance, as these approaches help to identify the barriers that sometimes prevent individuals from becoming entrepreneurs and the stages of entrepreneurship at which these barriers arise (Brixy et al., 2012; Klonek et al., 2015). For this reason, this dissertation pursued the study of three essential aspects in the entrepreneurial act, each at different points in the entrepreneurial process. The first study of this dissertation addressed the question of how the university ecosystem can contribute to strengthening innovation capabilities as one of the core skills of entrepreneurship. In doing so, this part of the dissertation contributes to the literature on entrepreneurial education and entrepreneurial ecosystems by providing important insights into the controversial question of whether the entrepreneur can be born or made (Fisher and Koch, 2008; Duval-Couetil, 2013). The second and third studies of this dissertation focused on a relatively new alternative to secure financial resources in the context of entrepreneurial activities, the crowdfunding phenomenon. Raising financial resources is still one of the biggest hurdles to successful entrepreneurial activity. To date, the acquisition of financial resources is still one of the biggest hurdles to successful entrepreneurial activity (Ko and McKelvie, 2018). Since securing financial resources from external sources is complicated by the occurrence of information asymmetries between entrepreneurs and potential investors that make it difficult to evaluate the quality of the venture (Amit et al., 1990), the investigation of signals to mitigate these information asymmetries has experienced a significant increase in interest in recent years (Colombo, 2021). The results of the two studies in this dissertation also show that both the type of information exchange through the use of specific communication tools and the topics of information provision themselves can have an impact on the successful financing of entrepreneurial initiatives through crowdfunding as the underlying medium. In the remainder of this final chapter of this dissertation, the theoretical and practical contributions of this dissertation are summarized and focused.

5.1 Theoretical Contribution

Taken as a whole, the empirical results of this dissertation contribute to the ever-growing body of knowledge on entrepreneurship. In particular, this dissertation provides new insights into the field of entrepreneurial education, as well as entrepreneurial finance. With this first study, we are contributing to the current call for the significant role of students as new generators of innovation by focusing on the university ecosystem and its potential for developing innovation capabilities (Åstebro et al., 2012). Our results also provide new insights into student involvement and the impact of such active involvement in the context of a defined ecosystem, in our case the university, thus again applying Astin's (1984) theoretical work to explain the impact of entrepreneurial education on the development of entrepreneurial skills. Furthermore, this study proves to be a driver of a new academic measurement tool for measuring individual innovation capabilities. As previous studies have mainly dealt with the collection of individual aspects related to innovation capacity, the framework developed by Selznick and Mayhew (2018) and operationalized in this study offers a more in-depth way of measuring innovation capacity by capturing nine constructs from three dimensions (intrapersonal, social, and cognitive). The results of this empirical contribution including its related validation of this new method to measure student innovation capacities can be used by future studies as well to identify further factors that can positively influence such capacities of students. The results of both the second and third study presented in this dissertation also contribute to the growing literature and related findings in entrepreneurial research, specifically the literature in entrepreneurial finance. The results of the research on the use of creative words and their impact on the likelihood of success in crowdfunding campaigns provide further empirical evidence of the relevance of signals to indicate the quality of entrepreneurial action and thus also extend the understanding of the applicability of Spence's signal theory (1973) to entrepreneurial funding initiatives. More specifically, the results of this study additionally point to the close connection between creativity and entrepreneurship. In particular, the results of this study additionally point to the close connection between creativity and entrepreneurship and also illustrate that creativity is a complex phenomenon consisting of a variety of entrepreneurial disciplines such as problem definition, problem identification and, also the solution of these very problems can

also be used as an important communication tool for entrepreneurs. As a further point, especially related to signaling theory, this study expands the understanding of the interplay between signals, in particular costly and costless signals, and their impact on the success of crowdfunding campaigns. Previous studies have already shown that, depending on the context, costly and costless signals are in a certain kind of dependency and can influence each other (e.g. Anglin et al., 2018). This is also confirmed and extended by the results of the second study. Following on from these findings, the results of the investigation into the role of updates as an information channel in crowdfunding campaigns also provide important insights for research into entrepreneurial financing from a theoretical perspective. The results provide empirical evidence that updates as a unilateral signal can lead to the reduction of information asymmetries and thus increase the probability of success of crowdfunding campaigns. In addition, the findings identified in this study also shed light on the comparability and applicability of the decision-making and investment criteria identified from more traditional forms of financing such as venture capital and highlights differences in this regard. Finally, the results of this study also provide some evidence of how the active involvement of the crowd itself can have a positive impact on the likelihood of success of crowdfunding campaigns and thus contributes to the entrepreneurial finance literature, which is concerned with the relationship between the entrepreneur and investor.

5.2 Practical Contribution

This dissertation also makes several contributions from a practical point of view. First, regarding the perspective of the first study, as policy states that higher education does not contribute to the promotion of innovation as it should (Hero et al., 2017), we provide empirical evidence that elements in the everyday university life of students have a significant influence on the development of skills that can foster innovation. The promotion and development of human capital in relation to innovation is in line with current expectations of universities and higher education in general, to spread a heightened entrepreneurial culture and thus fulfill universities' third mission, besides education and research (Franzoni and Lissoni, 2006; Laredo, 2007; Fini et al., 2011). Promoting and developing human capital with specific regard to innovation and entrepreneurship can not only help to address entrepreneurial and managerial challenges and barriers to growth and nascent business survival (Passaro et al., 2018) but also fulfilling

universities overriding goal in third mission activities: to serve the public (Bucks et al., 2019). The findings of the second study also lead to various practical contributions. From the point of view of entrepreneurs or project initiators of crowdfunding initiatives, the relevance of the use of specific communication, expressed by the use of words in the context of the description of the campaign, is once again apparent. Despite the already proven relevance of cost-intensive signals that lead to an increase in the probability of success, such as the provision of elaborate photos and videos to present the crowdfunding campaign, the potential of the use of words in the context of the description of the campaign should by no means be underestimated. Project initiators should pay particular attention to this when creating their campaign, as the increased anonymity that underlies the nature of crowdfunding initiatives makes it more difficult to create a basis of trust and to demonstrate the quality of the underlying venture. In addition, the results from the third study indicate that updates over the course of crowdfunding campaigns also have a high potential to reduce information asymmetries if this means of communication is used properly. In particular, information should be clearly separated between the initial launch of the campaign and updates during the campaign, so that there is no perception on the side of backers of immaturity or unprofessionalism of the project. In summary, all the results obtained in the course of this dissertation contribute to a further understanding of the complexity of entrepreneurship. The findings should lead to the further advancement of entrepreneurship and the strengthening of the successful practice of entrepreneurial activities in order to enable the promotion of innovation and to ensure the economic and cultural progress of the next generation.

6 References

- Achleitner, A.-K. and Braun, R. (2015) “Entrepreneurial Finance“, in *Handbuch Entrepreneurship*. Wiesbaden: Springer Fachmedien Wiesbaden, pp. 1–20. doi: 10.1007/978-3-658-05263-8_8-1.
- Acs, Z. J. et al. (2017) “The lineages of the entrepreneurial ecosystem approach“, *Small Business Economics*, 49(1). doi: 10.1007/s11187-017-9864-8.
- Adamska-Mieruszezwska, J. et al. (2021) “Keep it simple. The impact of language on crowdfunding success“, *Economics and Sociology*, 14(1), pp. 130–144. doi: 10.14254/2071-789X.2021/14-1/9.
- Agrawal, A., Catalini, C. and Goldfarb, A. (2014) “Some Simple Economics of Crowdfunding“, *Innovation Policy and the Economy*, 14, pp. 63–97. doi: 10.1086/674021.
- Agrawal, A., Catalini, C. and Goldfarb, A. (2015) “Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions”. Available at: www.netinst.org.
- Agrawal, A. and Cockburn, I. (2002) *University Research, Industrial R&D, and the Anchor Tenant Hypothesis*, National Bureau of Economic Research. Cambridge, MA. doi: 10.3386/w9212.
- Ahlers, G. K. C. et al. (2015) “Signaling in Equity Crowdfunding“, *Entrepreneurship: Theory and Practice*, 39(4), pp. 955–980. doi: 10.1111/etap.12157.
- Ahlstrom, D. and Bruton, G. D. (2006) “Venture Capital in Emerging Economies: Networks and Institutional Change“, *Entrepreneurship Theory and Practice*, 30(2), pp. 299–320. doi: 10.1111/j.1540-6520.2006.00122.x.
- Ahmad, S. Z., Abu Bakar, A. R. and Ahmad, N. (2018) “An evaluation of teaching methods of entrepreneurship in hospitality and tourism programs“, *The International Journal of Management Education*, 16(1), pp. 14–25. doi: 10.1016/j.ijme.2017.11.002.
- Algoe, S. B. and Haidt, J. (2009) “Witnessing excellence in action: the “other-praising” emotions of elevation, gratitude, and admiration“, *The Journal of Positive Psychology*, 4(2), pp. 105–127. doi: 10.1080/17439760802650519.
- Allison, T. H. et al. (2017) “Persuasion in crowdfunding: An elaboration likelihood model of crowdfunding performance“, *Journal of Business Venturing*, 32(6), pp. 707–725. doi: 10.1016/j.jbusvent.2017.09.002.
- Allon, G., Bassamboo, A. and Gurvich, I. (2011) ““We Will Be Right with You”: Managing Customer Expectations with Vague Promises and Cheap Talk“, *Operations Research*, 59(6), pp. 1382–1394. doi: 10.1287/opre.1110.0976.
- Alon, I., Farrell, M. and Li, S. (2020) “Regime Type and COVID-19 Response“, *FIIB Business Review*, 9(3), pp. 152–160. doi: 10.1177/2319714520928884.
- Amabile, T. M. (1982) “Social psychology of creativity: A consensual assessment technique“, *Journal of Personality and Social Psychology*, 43(5), pp. 997–1013. doi: 10.1037/0022-3514.43.5.997.

-
- Amabile, T. M. (1997) “Entrepreneurial Creativity Through Motivational Synergy“, *Journal of creative Behavior*, 31(1), pp. 18–26.
- Amit, R., Glosten, L. and Muller, E. (1990) “Entrepreneurial Ability , Venture Investments , and Risk Sharing Author (s): Raphael Amit , Lawrence Glosten and Eitan Muller Source : Management Science , Vol . 36 , No . 10 , Focussed Issue on the State of the Art in Theory and Method in Strategy Rese“, *Management Science*, 36(10), pp. 1232–1245.
- Andrews, F. M. and Farris, G. F. (1972) “Time pressure and performance of scientists and engineers: A five-year panel study“, *Organizational Behavior and Human Performance*, 8(2), pp. 185–200. doi: 10.1016/0030-5073(72)90045-1.
- Andrews, J. and Smith, D. C. (1996) “In Search of the Marketing Imagination: Factors Affecting the Creativity of Marketing Programs for Mature Products“, *Journal of Marketing Research*, 33(2), pp. 174–187. doi: 10.1177/002224379603300205.
- Anglin, A. H. et al. (2018) “The power of positivity? The influence of positive psychological capital language on crowdfunding performance“, *Journal of Business Venturing*, 33(4), pp. 470–492. doi: 10.1016/j.jbusvent.2018.03.003.
- Appiah, O. (2006) “Rich Media, Poor Media: The Impact of Audio/Video vs. Text/Picture Testimonial Ads on Browsers’ Evaluations of Commercial Web Sites and Online Products“, *Journal of Current Issues & Research in Advertising*, 28(1), pp. 73–86. doi: 10.1080/10641734.2006.10505192.
- Arranz, N. et al. (2017) “The effect of curricular and extracurricular activities on university students’ entrepreneurial intention and competences“, *Studies in Higher Education*, 42(11), pp. 1979–2008. doi: 10.1080/03075079.2015.1130030.
- Aspelund, A., Berg-Utby, T. and Skjevdal, R. (2005) “Initial resources’ influence on new venture survival: A longitudinal study of new technology-based firms“, *Technovation*, 25(11), pp. 1337–1347. doi: 10.1016/j.technovation.2004.06.004.
- Åstebro, T., Bazzazian, N. and Braguinsky, S. (2012) “Startups by recent university graduates and their faculty: Implications for university entrepreneurship policy“, *Research Policy*, 41(4), pp. 663–677. doi: 10.1016/j.respol.2012.01.004.
- Astin, A. (1984) “Student Involvement: A Developmental Theory for Higher Education.“, *Journal of College Student Personnel*, 25(4), pp. 297–308.
- Astin, A. W. (1993) “Assessment for Excellence: the philosophy and practice of assessment and evaluation in higher education“, New York: ORIX PRESS.
- Astin, Alexander W. (1993) “What matters in college? Four critical years revisited“, San Francisco: Jossey-Bass. Available at: <https://eric.ed.gov/?id=ED351927> (Accessed: 28 February 2019).
- Audretsch, D. (2012) “Entrepreneurship research“, *Management Decision*, 50(5), pp. 755–764. doi: 10.1108/00251741211227384.
- Audretsch, D. B., Cunningham, J. A., et al. (2019) “Entrepreneurial ecosystems: economic, technological, and societal impacts“, *Journal of Technology Transfer*, 44(2), pp. 313–325. doi: 10.1007/s10961-018-9690-4.

-
- Audretsch, D. B., Belitski, M. and Desai, S. (2019) “National Business Regulations and City Entrepreneurship in Europe: A Multilevel Nested Analysis“, *Entrepreneurship Theory and Practice*, 43(6), pp. 1148–1165. doi: 10.1177/1042258718774916.
- Audretsch, D. B. and Keilbach, M. (2004) “Does Entrepreneurship Capital Matter?“, *Entrepreneurship Theory and Practice*, 28(5), pp. 419–429. doi: 10.1111/j.1540-6520.2004.00055.x.
- Audretsch, D. B., Keilbach, M. C. and Lehmann, E. E. (2006) “Entrepreneurship and Economic Growth”, Oxford University Press.
doi: 10.1093/aprof:oso/9780195183511.001.0001.
- Bachher, J. S. and Guild, P. D. (1996) “Financing early stage technology based companies: investment criteria used by investors“, *Frontiers of Entrepreneurship Research*, 363(March), pp. 363–376.
- Backs, S., Günther, M. and Stummer, C. (2019) “Stimulating academic patenting in a university ecosystem: an agent-based simulation approach“, *Journal of Technology Transfer*, 44(2), pp. 434–461. doi: 10.1007/s10961-018-9697-x.
- Bae, T. J. et al. (2014) “The Relationship between Entrepreneurship Education and Entrepreneurial Intentions: A Meta-Analytic Review“, *Entrepreneurship Theory and Practice*, 38(2), pp. 217–254. doi: 10.1111/etap.12095.
- Bantel, K. A. and Jackson, S. E. (1989) “Top management and innovations in banking: Does the composition of the top team make a difference?“, *Strategic Management Journal*, 10(S1), pp. 107–124. doi: 10.1002/smj.4250100709.
- Barbi, M. and Bigelli, M. (2017) “Crowdfunding practices in and outside the US“, *Research in International Business and Finance*, 42(May 2017), pp. 208–223. doi: 10.1016/j.ribaf.2017.05.013.
- Baron, R. A., Markman G.D. and Balkin, D. B. (2002) “Inventors and New Venture Formation“, *Entrepreneurship Theory and Practice*, 27(2), pp. 149–165. doi: 10.1111/1540-8520.00004.
- Baron, R. A. (1998) “Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people“, *Journal of Business Venturing*, 13(4), pp. 275–294.
- Baron, R. A. (2002) “OB and entrepreneurship: The reciprocal benefits of closer conceptual links“, *Research in Organizational Behavior*. doi: 10.1016/s0191-3085(02)24007-1.
- Baron, R. A. (2008) “The Role of Affect in the Entrepreneurial Process“, *Academy of Management Review*, 33(2), pp. 328–340. doi: 10.5465/amr.2008.31193166.
- Baron, R. A. and Henry, R. A. (2010) “Entrepreneurship: The genesis of organizations.“, *APA handbook of industrial and organizational psychology, Vol 1: Building and developing the organization.*, 1, pp. 241–273. doi: 10.1037/12169-008.
- Baron, R. A. and Markman, G. D. (2000) “Beyond social capital: How social skills can enhance entrepreneurs’ success“, *Academy of Management Perspectives*, 14(1), pp. 106–116. doi: 10.5465/ame.2000.2909843.

-
- Baron, R. A., Markman, G. D. and Hirska, A. (2001) "Perceptions of women and men as entrepreneurs: Evidence for differential effects of attributional augmenting.", *Journal of Applied Psychology*, 86(5), pp. 923–929. doi: 10.1037/0021-9010.86.5.923.
- Basadur, M. (1994) "Managing the creative process in organizations".
- Basadur, M. (1997) "Organizational Development Interventions for Enhancing Creativity in the Workplace", *The Journal of Creative Behavior*, 31(1), pp. 59–72. doi: 10.1002/j.2162-6057.1997.tb00781.x.
- Batey, M. (2012) "The Measurement of Creativity: From Definitional Consensus to the Introduction of a New Heuristic Framework", *Creativity Research Journal*, 24(1), pp. 55–65. doi: 10.1080/10400419.2012.649181.
- Baum, J. R. and Locke, E. A. (2004) "The Relationship of Entrepreneurial Traits, Skill, and Motivation to Subsequent Venture Growth", *Journal of Applied Psychology*, 89(4), pp. 587–598. doi: 10.1037/0021-9010.89.4.587.
- Baumol, W. J. (1968) "Entrepreneurship in Economic Theory", *The American Economic Review*, 58(2), pp. 64–71.
- Baumol, W. J. (2004) "Education for innovation", *IEEE Spectrum*, 5(1), pp. 83–89. doi: 10.1109/MSPEC.1968.5215638.
- Bayus, B. L. (2013) "Crowdsourcing New Product Ideas over Time: An Analysis of the Dell IdeaStorm Community", *Management Science*, 59(1), pp. 226–244. doi: 10.1287/mnsc.1120.1599.
- Becker-Blease, J. R. and Sohl, J. E. (2015) "New venture legitimacy: the conditions for angel investors", *Small Business Economics*, 45(4), pp. 735–749. doi: 10.1007/s11187-015-9668-7.
- Belitski, M., Caiazza, R. and Lehmann, E. E. (2021) "Knowledge frontiers and boundaries in entrepreneurship research", *Small Business Economics*, 56(2), pp. 521–531. doi: 10.1007/s11187-019-00187-0.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2013) "Individual crowdfunding practices", *Venture Capital*, 15(4), pp. 313–333. doi: 10.1080/13691066.2013.785151.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2014) "Crowdfunding: Tapping the right crowd", *Journal of Business Venturing*, 29(5), pp. 585–609. doi: 10.1016/j.jbusvent.2013.07.003.
- Bergemann, D. and Hege, U. (1998) "Venture capital financing, moral hazard, and learning", *Journal of Banking and Finance*, 22(6–8), pp. 703–735. doi: 10.1016/S0378-4266(98)00017-X.
- Berger, J. and Milem, J. (2000) "Organizational Behavior in Higher Education and Student Outcomes", in *Higher Education: Handbook of Theory and Research*. XV. New York: Agathon, pp. 268–338.
- Bergh, D. D. et al. (2014) "Signalling theory and equilibrium in strategic management research: An assessment and a research agenda", *Journal of Management Studies*, 51(8), pp. 1334–1360. doi: 10.1111/joms.12097.

-
- Berni, A., Maccioni, L. and Borgianni, Y. (2020) "Observing pictures and videos of creative products: An eye tracking study", *Applied Sciences (Switzerland)*, 10(4). doi: 10.3390/app10041480.
- Bernstein, P. et al. (2011) "Challenges and Opportunities with Big Data 2011-1", Cyber Center Technical Reports, Available at: <http://docs.lib.purdue.edu/cctechhttp://docs.lib.purdue.edu/cctech/1>.
- Bertoni, F., Colombo, M. G. and Grilli, L. (2011) "Venture capital financing and the growth of high-tech start-ups: Disentangling treatment from selection effects", *Research Policy*, 40(7), pp. 1028–1043. doi: 10.1016/j.respol.2011.03.008.
- Besemer, S. and O'Quin, K. (1986) "Analyzing Creative Products: Refinement and Test of a Judging Instrument", *The Journal of Creative Behavior*, 20(2), pp. 115–126.
- Besemer, S. P. and Treffinger, D. J. (1981) "Analysis of Creative Products: Review and Synthesis", *The Journal of Creative Behavior*, 15(3), pp. 158–178. doi: 10.1002/j.2162-6057.1981.tb00287.x.
- Bezerra, C. (2017) "Building Innovation Competencies", *Proceedings of the Canadian Engineering Education Association*. doi: 10.24908/pceea.v0i0.3898.
- Bi, S., Liu, Z. and Usman, K. (2017) "The influence of online information on investing decisions of reward-based crowdfunding", *Elsevier*, vol. 71(C), pp. 10-18, doi: 10.1016/j.jbusres.2016.10.001.
- Birley, S. (1985) "The role of networks in the entrepreneurial process", *Journal of Business Venturing*, 1(1), pp. 107–117. doi: 10.1016/0883-9026(85)90010-2.
- Björklund, T. et al. (2011) "Aalto University Design Factory in the eyes of its community". Available at: <https://aaltodoc.aalto.fi/handle/123456789/12171> (Accessed: 28 February 2019).
- Blanco, C. F., Sarasa, R. G. and Sanclemente, C. O. (2010) "Effects of visual and textual information in online product presentations: Looking for the best combination in website design", *European Journal of Information Systems*, 19(6), pp. 668–686. doi: 10.1057/ejis.2010.42.
- Blank, S. (2013) "The four steps to the epiphany". K&S Ranch.
- Bliege Bird, R. and Smith, E. A. (2005) "Signaling Theory, Strategic Interaction, and Symbolic Capital", *Current Anthropology*, 46(2), pp. 221–248. doi: 10.1086/427115.
- Block, J. H. et al. (2014) "Trademarks and venture capital valuation", *Journal of Business Venturing*, 29(4), pp. 525–542. doi: 10.1016/j.jbusvent.2013.07.006.
- Block, J. H., Fisch, C. O. and van Praag, M. (2017) "The Schumpeterian entrepreneur: a review of the empirical evidence on the antecedents, behaviour and consequences of innovative entrepreneurship", *Industry and Innovation*, 24(1), pp. 61–95. doi: 10.1080/13662716.2016.1216397.
- Block, J., Hornuf, L. and Moritz, A. (2018) "Which updates during an equity crowdfunding campaign increase crowd participation?", *Small Business Economics*, 50(1). doi: 10.1007/s11187-017-9876-4.

-
-
- Blohm, I., Leimeister, J. M. and Krcmar, H. (2013) “Crowdsourcing: How to Benefit from (Too) Many Great Ideas“, *MIS Quarterly Executive*, 12, pp. 199–211.
- Bömer, M. and Maxin, H. (2018) “Why fintechs cooperate with banks—evidence from germany“, *Zeitschrift für die gesamte Versicherungswissenschaft*, 107(4), pp. 359–386. doi: 10.1007/s12297-018-0421-6.
- Bonaccorsi, A. et al. (2013) “University specialization and new firm creation across industries“, *Small Business Economics*, 41(4), pp. 837–863. doi: 10.1007/s11187-013-9509-5.
- Borchers, A. and Park, S. A. (2010) “Understanding Entrepreneurial Mindset: A Study of Entrepreneurial Self Efficacy, Locus of Control and Intent to Start a Business“, *Journal of Engineering Entrepreneurship*, 1, pp. 51–62.
- Bosma, N., van Stel, A. and Suddle, K. (2008) “The geography of new firm formation: Evidence from independent start-ups and new subsidiaries in the Netherlands“, *International Entrepreneurship and Management Journal*, 4(2), pp. 129–146. doi: 10.1007/s11365-007-0058-8.
- Bowen, D. D. and Hisrich, R. D. (2011) “The Female Entrepreneur: A Career Development Perspective.“, *Academy of Management Review*, 11(2), pp. 393–407. doi: 10.5465/amr.1986.4283366.
- Brabham, D. C. (2010) “MOVING THE CROWD AT THREADLESS“, *Information, Communication & Society*, 13(8), pp. 1122–1145. doi: 10.1080/13691181003624090.
- Braun, D. and Merrien, F. X. (1999) “Towards a new model of governance for universities? A comparative view“, London: Jessica Kingsley.
- Braxton, J. M. (1993) “Selectivity and Rigor in Research Universities“, *The Journal of Higher Education*, 64(6), p. 657. doi: 10.2307/2960017.
- Brenner, W. et al. (2014) “User, Use & Utility Research“, *WIRTSCHAFTSINFORMATIK*, 56(1), pp. 65–72. doi: 10.1007/s11576-013-0394-y.
- Brixy, U., Sternberg, R. and Stüber, H. (2012) “The Selectiveness of the Entrepreneurial Process“, *Journal of Small Business Management*, 50(1), pp. 105–131. doi: 10.1111/j.1540-627X.2011.00346.x.
- Brüntje, D. and Oliver, G. (2016) *Crowdfunding in Europe. State of the Art in Theory and Practice* In association with the European Crowdfunding Network.
- Buckingham, D. (2009) ““Creative” visual methods in media research: Possibilities, problems and proposals“, *Media, Culture and Society*, 31(4), pp. 633–652. doi: 10.1177/0163443709335280.
- Buettner, R. (2015) “A Systematic Literature Review of Crowdsourcing Research from a Human Resource Management Perspective“, in 2015 48th Hawaii International Conference on System Sciences. IEEE, pp. 4609–4618. doi: 10.1109/HICSS.2015.549.
- Burbidge, J. B., Magee, L. and Robb, A. L. (1988) “Alternative Transformations to Handle Extreme Values of the Dependent Variable“, *Journal of the American Statistical Association*, 83(401), p. 123. doi: 10.2307/2288929.

-
- Busenitz, L. W. and Barney, J. B. (1997) “Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making“, *Journal of Business Venturing*, 12(1), pp. 9–30. doi: 10.1016/S0883-9026(96)00003-1.
- Busenitz, L. W., Fiet, J. O. and Moesel, D. D. (2005) “Signaling in venture capitalist – New venture team funding decisions: Does it indicate long-term venture outcomes?“, *Entrepreneurship: Theory and Practice*, 29(1), pp. 1–12. doi: 10.1111/j.1540-6520.2005.00066.x.
- Butter, R. (2017) Psychometric validation of a tool for Innovation Competencies Development and Assessment using a mixed-method design. Available at: https://static1.squarespace.com/static/583dddb7cd0f686c5defc5bb/t/58da1ce5e3df28fabb796bff/1490689255628/EURAM_Validation_WP7_Rev1.pdf (Accessed: 27 February 2019).
- Butticè, V., Colombo, M. G. and Wright, M. (2017) “Serial Crowdfunding, Social Capital, and Project Success“, *Entrepreneurship: Theory and Practice*, 41(2), pp. 183–207. doi: 10.1111/etap.12271.
- Butticè, V. and Rovelli, P. (2020) ““Fund me, I am fabulous!” Do narcissistic entrepreneurs succeed or fail in crowdfunding?“, *Personality and Individual Differences*, 162(February), p. 110037. doi: 10.1016/j.paid.2020.110037.
- Caird, S. (1992) “Problems With the Identification of Enterprise Competencies and the Implications for Assessment and Development“, *Management Education and Development*, 23(1), pp. 6–17. doi: 10.1177/135050769202300110.
- Calic, G. and Mosakowski, E. (2016) “Kicking Off Social Entrepreneurship: How A Sustainability Orientation Influences Crowdfunding Success“, *Journal of Management Studies*, 53(5), pp. 738–767. doi: 10.1111/joms.12201.
- Carpentier, C. and Suret, J. M. (2015) “Angel group members“ decision process and rejection criteria: A longitudinal analysis“, *Journal of Business Venturing*, 30(6), pp. 808–821. doi: 10.1016/j.jbusvent.2015.04.002.
- Chan, C. S. R. et al. (2018) “Reward-based crowdfunding success: decomposition of the project, product category, entrepreneur, and location effects“, *Venture Capital*, 20(3), pp. 285–307. doi: 10.1080/13691066.2018.1480267.
- Chan, C. S. R. et al. (2020) “Bellwether and the herd? Unpacking the u-shaped relationship between prior funding and subsequent contributions in reward-based crowdfunding“, *Journal of Business Venturing*, 35(2), pp. 1–24. doi: 10.1016/j.jbusvent.2019.04.002.
- Chan, C. S. R. and Park, H. D. (2015) “How images and color in business plans influence venture investment screening decisions“, *Journal of Business Venturing*, 30(5), pp. 732–748. doi: 10.1016/j.jbusvent.2014.12.002.
- Chan, H. F. et al. (2021) “The effects of money saliency and sustainability orientation on reward based crowdfunding success“, *Journal of Business Research*, 125, pp. 443–455. doi: 10.1016/j.jbusres.2019.07.037.

-
- Chávez-Tellería, R., Repellin-Moreno, A. A. and Mendieta-Jiménez, B. A. (2017) “ENTREPRENEURSHIP AND INNOVATION LAB: A PROPOSAL FOR THE ENHANCEMENT OF AN ENTREPRENEURIAL PROFILE IN UNDERGRADUATE STUDENTS”, in, pp. 7484–7489. doi: 10.21125/iceri.2017.2002.
- Chen, J. et al. (2014) “Understanding individuals’ personal values from social media word use“, in Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing - CSCW ‘14. New York, New York, USA: ACM Press, pp. 405–414. doi: 10.1145/2531602.2531608.
- Chen, M.-H. and Agrawal, S. (2018) “What leads to effective team learning performance within university students? The moderating effects of “Guanxi”“, *The International Journal of Management Education*, 16(3), pp. 432–445. doi: 10.1016/j.ijme.2018.07.002.
- Chen, S., Thomas, S. and Kohli, C. (2016) “What really makes a promotional campaign succeed on a crowdfunding platform? Guilt, utilitarian products, emotional messaging, and fewer but meaningful rewards drive donations“, *Journal of Advertising Research*, 56(1). doi: 10.2501/JAR-2016-002.
- Chen, X.-P., Yao, X. and Kotha, S. (2009) “Entrepreneur Passion And Preparedness In Business Plan Presentations: A Persuasion Analysis Of Venture Capitalists’ Funding Decisions“, *Academy of Management Journal*, 52(1), pp. 199–214. doi: 10.5465/amj.2009.36462018.
- Chia, C.-C. and Liang, C. (2016) “Influence of Creativity and Social Capital on the Entrepreneurial Intention of Tourism Students“, *Journal of Entrepreneurship, Management and Innovation*, 12(2), pp. 151–167. doi: 10.7341/20161227.
- Chickering, A. W. (1974) “Commuting versus resident students: Overcoming the educational inequities of living off campus”, San Francisco: Jossey-Bass Publishers.
- Cholakova, M. and Clarysse, B. (2015) “Does the Possibility to Make Equity Investments in Crowdfunding Projects Crowd Out Reward-Based Investments?“, *Entrepreneurship Theory and Practice*, 39(1), pp. 145–172. doi: 10.1111/etap.12139.
- Chye Koh, H. (1996) “Testing hypotheses of entrepreneurial characteristics“, *Journal of Managerial Psychology*, 11(3), pp. 12–25. doi: 10.1108/02683949610113566.
- Cialdini, R. (2016) *Pre-suasion: A revolutionary way to influence and persuade.*, Pre-suasion: A revolutionary way to influence and persuade. New York, NY, US: Simon & Schuster.
- Clarysse, B. et al. (2014) “Creating value in ecosystems: Crossing the chasm between knowledge and business ecosystems“, *Research Policy*, 43(7), pp. 1164–1176. doi: 10.1016/j.respol.2014.04.014.
- Clauss, T. et al. (2018) “Directing the wisdom of the crowd: the importance of social interaction among founders and the crowd during crowdfunding campaigns“, *Economics of Innovation and New Technology*, 27(8), pp. 709–729. doi: 10.1080/10438599.2018.1396660.

-
- Coleman, S. and Robb, A. (2014) "Access to capital by high-growth women-owned businesses", in *Women-Owned Businesses: Analyses of Growth Influences and Access to Capital*, pp. 67–95.
- Collins, L. and Pierrakis, Y. (2012) "The venture crowd: Crowdfunding equity investment into business", *Nesta*, (July), pp. 1–36.
- Colombo, M. G. et al. (2019) "The governance of entrepreneurial ecosystems", *Small Business Economics*, 52(2), pp. 419–428. doi: 10.1007/s11187-017-9952-9.
- Colombo, M. G., Franzoni, C. and Rossi-Lamastra, C. (2015) "Internal Social Capital and the Attraction of Early Contributions in Crowdfunding", *Entrepreneurship Theory and Practice*, 39(1), pp. 75–100. doi: 10.1111/etap.12118.
- Colombo, M. G., Grilli, L. and Verga, C. (2007) "High-tech start-up access to public funds and venture capital: Evidence from Italy", *International Review of Applied Economics*, 21(3), pp. 381–402. doi: 10.1080/02692170701390361.
- Colombo, O. (2021) "The Use of Signals in New-Venture Financing: A Review and Research Agenda", *Journal of Management*, 47(1), pp. 237–259. doi: 10.1177/0149206320911090.
- Connelly, B. L. et al. (2011) "Signaling theory: A review and assessment", *Journal of Management*, 37(1), pp. 39–67. doi: 10.1177/0149206310388419.
- Cooper, R. G. and Kleinschmidt, E. J. (1987) "New products: What separates winners from losers?", *Journal of Product Innovation Management*, 4(3), pp. 169–184. doi: 10.1016/0737-6782(87)90002-6.
- Cornelius, P. B. and Gokpinar, B. (2020) "The role of customer investor involvement in crowdfunding success", *Management Science*, 66(1), pp. 452–472. doi: 10.1287/mnsc.2018.3211.
- Cosh, A., Cumming, D. and Hughes, A. (2009) "Outside Entrepreneurial Capital", *The Economic Journal*, 119(540), pp. 1494–1533. doi: 10.1111/j.1468-0297.2009.02270.x.
- Courtney, C., Dutta, S. and Li, Y. (2017) "Resolving Information Asymmetry: Signaling, Endorsement, and Crowdfunding Success", *Entrepreneurship: Theory and Practice*, 41(2), pp. 265–290. doi: 10.1111/etap.12267.
- Cropley, A. J. (2000) "Defining and measuring creativity: Are creativity tests worth using?", *Roeper Review*, 23(2), pp. 72–79. doi: 10.1080/02783190009554069.
- Cropley, D. H., Kaufman, J. C. and Cropley, A. J. (2011) "Measuring creativity for innovation management", *Journal of Technology Management and Innovation*, 6(3), pp. 13–40. doi: 10.4067/s0718-27242011000300002.
- Csikszentmihalyi, M. and Getzels, J. W. (1971) "Discovery-oriented behavior and the originality of creative products: A study with artists.", *Journal of Personality and Social Psychology*. US: American Psychological Association, pp. 47–52. doi: 10.1037/h0031106.

-
- Cui, J., Sun, J. and Bell, R. (2021) “The impact of entrepreneurship education on the entrepreneurial mindset of college students in China: The mediating role of inspiration and the role of educational attributes“, *International Journal of Management Education*, 19(1), pp. 1–16. doi: 10.1016/j.ijme.2019.04.001.
- Cumming, D. J. et al. (2017) “Disentangling Crowdfunding from Fraudfunding“, *SSRN Electronic Journal*. doi: 10.2139/ssrn.2828919.
- Cumming, D. J., Leboeuf, G. and Schwienbacher, A. (2020) “Crowdfunding models: Keep-It-All vs. All-Or-Nothing“, *Financial Management*, 49(2), pp. 331–360. doi: 10.1111/fima.12262.
- Cummings, M. E. et al. (2020) “An equity crowdfunding research agenda: evidence from stakeholder participation in the rulemaking process“, *Small Business Economics*, 54(4), pp. 907–932. doi: 10.1007/s11187-018-00134-5.
- Cunningham, J. A., Menter, M. and Wirsching, K. (2019) “Entrepreneurial ecosystem governance: a principal investigator-centered governance framework“, *Small Business Economics*, 52(2), pp. 545–562. doi: 10.1007/s11187-017-9959-2.
- Dahlander, L. and Piezunka, H. (2014) “Open to suggestions: How organizations elicit suggestions through proactive and reactive attention“, *Research Policy*, 43(5), pp. 812–827. doi: 10.1016/j.respol.2013.06.006.
- Dahle, Y. et al. (2019) “An analysis of Core Competence and Unique Value Proposition as normative entrepreneurship elements“, *Proceedings - 2019 IEEE International Conference on Engineering, Technology and Innovation, ICE/ITMC 2019*.
- Danilov, A. and Sliwka, D. (2017) “Can Contracts Signal Social Norms? Experimental Evidence“, *Management Science*, 63(2), pp. 459–476. doi: 10.1287/mnsc.2015.2336.
- Davidsson, P. (2005) “Nascent Entrepreneurship: Empirical Studies and Developments“, *Foundations and Trends® in Entrepreneurship*, 2(1), pp. 1–76. doi: 10.1561/0300000005.
- Davies, W. E. and Giovannetti, E. (2018) “Signalling experience & reciprocity to temper asymmetric information in crowdfunding evidence from 10,000 projects“, *Technological Forecasting and Social Change*, 133, pp. 118–131. doi: 10.1016/j.techfore.2018.03.011.
- Davila, A., Foster, G. and Gupta, M. (2003) “Venture capital financing and the growth of startup firms“, *Journal of Business Venturing*, 18(6), pp. 689–708. doi: 10.1016/S0883-9026(02)00127-1.
- Davis, B. C. et al. (2017) “Funders’ positive affective reactions to entrepreneurs’ crowdfunding pitches: The influence of perceived product creativity and entrepreneurial passion“, *Journal of Business Venturing*, 32(1), pp. 90–106. doi: 10.1016/j.jbusvent.2016.10.006.
- Davis, B. G. (2009) “Tools for Teaching“. San Francisco: Jossey-Bass, pp. 491–496. Available at: <https://www.indiana.edu/~istr695/readingsfall2013/Tools For Teaching.pdf> (Accessed: 28 February 2019).

-
-
- Dekoninck, E. (2012) “Enhancing the innovation skills in engineering students“, Proceedings of the 14th International Conference on Engineering and Product Design Education: Design Education for Future Wellbeing, EPDE 2012, (September), pp. 1–6.
- Denis, D. J. (2004) “Entrepreneurial finance: an overview of the issues and evidence“, *Journal of Corporate Finance*, 10(2), pp. 301–326. doi: 10.1016/S0929-1199(03)00059-2.
- Devaraj, S. and Patel, P. C. (2016) “Influence of number of backers, goal amount, and project duration on meeting funding goals of crowdfunding projects“, 36, pp. 1242–1249.
- Dimov, D. P. and Shepherd, D. A. (2005) “Human capital theory and venture capital firms: Exploring “home runs” and “strike outs”“, *Journal of Business Venturing*, 20(1), pp. 1–21. doi: 10.1016/j.jbusvent.2003.12.007.
- Dingman, S. (2013) “Canadian’s smartwatch startup matches record \$15-million in VC funding“, *The Globe and Mail*, 16, p. 2013.
- Dor, D. (2003) “On newspaper headlines as relevance optimizers“, *Journal of Pragmatics*, 35(5), pp. 695–721. doi: 10.1016/S0378-2166(02)00134-0.
- Drucker, P. F. (1999) “Knowledge-Worker Productivity: The Biggest Challenge“, *California Management Review*, 41(2), pp. 79–94. doi: 10.2307/41165987.
- Duriau, V. J., Reger, R. K. and Pfarrer, M. D. (2007) “A Content Analysis of the Content Analysis Literature in Organization Studies: Research Themes, Data Sources, and Methodological Refinements“, *Organizational Research Methods*, 10(1), pp. 5–34. doi: 10.1177/1094428106289252.
- Dirso, F. T. and O’Sullivan, C. S. (1983) “Naming and remembering proper and common nouns and pictures“, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9(3), pp. 497–510. doi: 10.1037/0278-7393.9.3.497.
- Dutta, S. and Folta, T. B. (2016) “A comparison of the effect of angels and venture capitalists on innovation and value creation“. doi: 10.1016/j.jbusvent.2015.08.003.
- Duval-Couetil, N. (2013) “Assessing the impact of entrepreneurship education programs: Challenges and approaches“, *Journal of Small Business Management*, 51(3), pp. 394–409. doi: 10.1111/jsbm.12024.
- Ebben, J. and Johnson, A. (2006) “Bootstrapping in small firms: An empirical analysis of change over time“, *Journal of Business Venturing*, 21(6), pp. 851–865. doi: 10.1016/j.jbusvent.2005.06.007.
- EC (2006) “Entrepreneurship education in europe: Fostering entrepreneurial mindsets through education and learning”, in Final proceedings of the conference on entrepreneurship education. Oslo, p. 17.
- Eccles, J. S. (1994) “Understanding Women’s Educational And Occupational Choices: Applying the Eccles et al. Model of Achievement-Related Choices“, *Psychology of Women Quarterly*, 18(4), pp. 585–609. doi: 10.1111/j.1471-6402.1994.tb01049.x.

-
- Eppler, M. J. and Mengis, J. (2004) "The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines", *The Information Society*, 20(5), pp. 325–344. doi: 10.1080/01972240490507974.
- Erikson, T. (2003) "Towards a taxonomy of entrepreneurial learning experiences among potential entrepreneurs", *Journal of Small Business and Enterprise Development*, 10(1), pp. 106–112. doi: 10.1108/14626000310461240.
- Espenlaub, S. and Khurshed, A. (2014) "The Exit behavior of Venture Capital firms The Exit behavior of Venture Capital firms", (January 2009).
- Etzkowitz, H. and Leydesdorff, L. (2000) "The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations", *Research Policy*, 29(2), pp. 109–123. doi: 10.1016/S0048-7333(99)00055-4.
- Farrell, J. and Rabin, M. (1996) "Cheap Talk", *Journal of Economic Perspectives*, 10(3), pp. 103–118. doi: 10.1257/jep.10.3.103.
- Fayolle, A. (2013) "Personal views on the future of entrepreneurship education", *Entrepreneurship & Regional Development*, 25(7–8), pp. 692–701. doi: 10.1080/08985626.2013.821318.
- Fayolle, A. and Gailly, B. (2008) "From craft to science", *Journal of European Industrial Training*, 32(7), pp. 569–593. doi: 10.1108/03090590810899838.
- Feeney, L., Haines, G. H. and Riding, A. L. (1999) "Private investors' investment criteria: Insights from qualitative data", *Venture Capital*, 1(2), pp. 121–145. doi: 10.1080/136910699295938.
- Fiet, J. O. (1995) "Reliance upon informants in the venture capital industry", *Journal of Business Venturing*, 10(3), pp. 195–223. doi: 10.1016/0883-9026(94)00039-W.
- Fini, R. et al. (2011) "Complements or substitutes? The role of universities and local context in supporting the creation of academic spin-offs", *Research Policy*, 40(8), pp. 1113–1127. doi: 10.1016/j.respol.2011.05.013.
- Finn, J. D. (1993) "School engagement and students at risk", National Center for Education Statistics.
- Fisher, J. L. and Koch, J. V. (2008) "Born, not made: the entrepreneurial personality", Praeger. Available at: <https://cmc.marmot.org/Record/.b31213194?mylang=es> (Accessed: 24 February 2019).
- Franzoni, C. and Lissoni, F. (2006) "Academic entrepreneurship, patents, and spin-offs: critical issues and lessons for Europe".
- Freear, J., Sohl, J. E. and Wetzell, W. E. (1994) "Angels and non-angels: Are there differences?", *Journal of Business Venturing*, 9(2), pp. 109–123. doi: 10.1016/0883-9026(94)90004-3.
- Fritsch, M. and Mueller, P. (2004) "Effects of New Business Formation on Regional Development over Time", *Regional Studies*, 38(8), pp. 961–975. doi: 10.1080/0034340042000280965.

-
- Frydrych, D. et al. (2014) “Exploring entrepreneurial legitimacy in reward-based crowdfunding“, *Venture Capital*, 16(3), pp. 247–269. doi: 10.1080/13691066.2014.916512.
- Gafni, H., Marom, D. and Sade, O. (2019) “Are the life and death of an early-stage venture indeed in the power of the tongue? Lessons from online crowdfunding pitches“, *Strategic Entrepreneurship Journal*, 13(1). doi: 10.1002/sej.1293.
- Gallemore, C., Nielsen, K. R. and Jespersen, K. (2019) “The uneven geography of crowdfunding success: Spatial capital on Indiegogo“, *Environment and Planning A: Economy and Space*, 51(6), pp. 1389–1406. doi: 10.1177/0308518X19843925.
- Genco, N., Seepersad, C. C. and Holtta-Otto, K. (2010) “An Experimental Investigation of the Innovation Capabilities of Engineering Students“, *American Society for Engineering Education Annual Conference and Exposition 2010*, pp. 1–19.
- Van Gennep, A. (1960) “The Rites of Passage“, London: Routledge and Kegan Paul.
- Gentzkow, M., Kelly, B. and Taddy, M. (2019) “Text as Data“, *Journal of Economic Literature*, 57(3), pp. 535–574. doi: 10.1257/jel.20181020.
- Gerber, E. M., Hui, J. S. and Kuo, P.-Y. (2012) “Crowdfunding: Why people are motivated to post and fund projects on crowdfunding platforms“, Available at: http://juliehui.org/wp-content/uploads/2013/04/CSCW_Crowdfunding_Final.pdf.
- Gilad, B. (1984) “Entrepreneurship: The Issue of Creativity in the Market Place“, *The Journal of Creative Behavior*, 18(3), pp. 151–161. doi: 10.1002/j.2162-6057.1984.tb00379.x.
- Gompers, P. A. et al. (2020) “How do venture capitalists make decisions?“, *Journal of Financial Economics*, 135(1), pp. 169–190. doi: 10.1016/j.jfineco.2019.06.011.
- Gompers, P. and Lerner, J. (2004) “The Venture Capital Cycle“.
- Gorman, M. and Sahlman, W. A. (1989) “What do venture capitalists do?“, *Journal of Business Venturing*, 4(4), pp. 231–248. doi: 10.1016/0883-9026(89)90014-1.
- Gornall, W. and Strebulaev, I. A. (2020) “Squaring venture capital valuations with reality“, *Journal of Financial Economics*, 135(1), pp. 120–143. doi: 10.1016/j.jfineco.2018.04.015.
- Greiner, M. E. and Wang, H. (2010) “Building Consumer-to-Consumer Trust in E-Finance Marketplaces: An Empirical Analysis“, *International Journal of Electronic Commerce*, 15(2), pp. 105–136. doi: 10.2753/JEC1086-4415150204.
- Grichnik, D. et al. (2017) “Entrepreneurship : unternehmerisches Denken, Entscheiden und Handeln in innovativen und technologieorientierten Unternehmen“, 2. Auflage, Schäffer-Poeschel.
- Guan, L. (2016) “A short literature review on reward-based crowdfunding“, 2016 13th International Conference on Service Systems and Service Management, ICSSSM 2016. doi: 10.1109/ICSSSM.2016.7538636.
- Guo, L. et al. (2018) “Distance Diffusion of Home Bias for Crowdfunding Campaigns between Categories: Insights from Data Analytics“, *Sustainability*, 10(4), p. 1251. doi: 10.3390/su10041251.

-
- Hackett, G., Betz, N. E. and Hackett, G. (2016) “The relationship of career-related self-efficacy expectations to perceived career options in college women and men”, *Journal of Counseling Psychology*, 28(5), 399–410. doi: 10.1037/0022-0167.28.5.399.
- Hackett, P. M. W. and St.Clair, K. (2014) “Academic Challenge: its Meaning for College Students and Faculty”, *Journal on Centers for Teaching and Learning*, 4, pp. 101-117.
- Hall, B. H. and Lerner, J. (2010) “The Financing of R&D and Innovation“, in, pp. 609–639. doi: 10.1016/S0169-7218(10)01014-2.
- Hall, J. and Hofer, C. W. (1993) “Venture capitalist“ decision criteria in new venture evaluation“, *IEEE Engineering Management Review*, 21(2), pp. 49–58.
- Hallam, C. et al. (2014) “Accelerating Collegiate Entrepreneurship (ACE): The Architecture of a University Entrepreneurial Ecosystem Encompassing an Intercollegiate Venture Experience“, *Journal of Business and Entrepreneurship*, 26(2), p. 95.
- Haltiwanger, J., Jarmin, R. S. and Miranda, J. (2013) “Who Creates Jobs? Small versus Large versus Young“, *Review of Economics and Statistics*, 95(2), pp. 347–361. doi: 10.1162/REST_a_00288.
- Hannigan, T. R. et al. (2019) “Topic Modeling in Management Research: Rendering New Theory from Textual Data“, *Academy of Management Annals*, 13(2), pp. 586–632. doi: 10.5465/annals.2017.0099.
- Häussler, C., Harhoff, D. and Müller, E. (2011) “To Be Financed or Not... - The Role of Patents for Venture Capital Financing“, *SSRN Electronic Journal*, (09). doi: 10.2139/ssrn.1393725.
- Hayter, C. S. (2016) “A trajectory of early-stage spinoff success: the role of knowledge intermediaries within an entrepreneurial university ecosystem“, *Small Business Economics*, 47(3), pp. 633–656. doi: 10.1007/s11187-016-9756-3.
- Heaton, S., Siegel, D. S. and Teece, D. J. (2019) “Universities and innovation ecosystems: A dynamic capabilities perspective“, *Industrial and Corporate Change*, 28(4), pp. 921–939. doi: 10.1093/icc/dtz038.
- Henry, C., Hill, F. and Leitch, C. (2005) “Entrepreneurship education and training: can entrepreneurship be taught? Part I“, *Education + Training*, 47(2), pp. 98–111. doi: 10.1108/00400910510586524.
- Hero, L.-M., Lindfors, E. and Taatila, V. (2017) “Individual Innovation Competence: A Systematic Review and Future Research Agenda“, *International Journal of Higher Education*, 6(5), p. 103. doi: 10.5430/ijhe.v6n5p103.
- Hobbs, J., Grigore, G. and Molesworth, M. (2016) “Success in the management of crowdfunding projects in the creative industries“, *Internet Research*, 26(1), pp. 146–166. doi: 10.1108/IntR-08-2014-0202.
- Holsti, O. R. (1969) “Content Analysis for the Social Sciences and Humanities“, Reading, Ma: Addison-Wesley.

-
-
- Horn, D. and Salvendy, G. (2006) “Product creativity: Conceptual model, measurement and characteristics“, *Theoretical Issues in Ergonomics Science*, 7(4), pp. 395–412. doi: 10.1080/14639220500078195.
- Hornuf, L. and Schwienbacher, A. (2016) “Crowdinvesting: angel investing for the masses?“, in *Handbook of Research on Business Angels*. Edward Elgar Publishing, pp. 381–398. Available at: https://econpapers.repec.org/RePEc:elg:ee-chap:15634_15.
- Hornuf, L. and Schwienbacher, A. (2018) “Market mechanisms and funding dynamics in equity crowdfunding“, *Journal of Corporate Finance*, 50, pp. 556–574. doi: 10.1016/j.jcorpfin.2017.08.009.
- Hsu, D. H. (2007) “Experienced entrepreneurial founders, organizational capital, and venture capital funding“, *Research Policy*, 36(5), pp. 722–741. doi: 10.1016/j.respol.2007.02.022.
- Hu, M.-C. and Mathews, J. A. (2008) “China’s national innovative capacity“, *Research Policy*, 37(9), pp. 1465–1479. doi: 10.1016/j.respol.2008.07.003.
- Hu, Y.-L., Hung, C.-H. and Ching, G. S. (2014) “Student-faculty interaction: Mediating between student engagement factors and educational outcome gains“, *International Journal of Research Studies in Education*, 4(1). doi: 10.5861/ijrse.2014.800.
- Hulme, E., Thomas, B. and DeLaRosby, H. (2014) “Developing Creativity Ecosystems: Preparing College Students for Tomorrow’s Innovation Challenge“, *About Campus*, 19(1), pp. 14–23. doi: 10.1002/abc.21146.
- Hynes, M. M. and Hynes, W. J. (2018) “If you build it, will they come? Student preferences for Makerspace environments in higher education“, *International Journal of Technology and Design Education*, 28(3), pp. 867–883. doi: 10.1007/s10798-017-9412-5.
- Illeris, K. (2009) “Transfer of learning in the learning society: How can the barriers between different learning spaces be surmounted, and how can the gap between learning inside and outside schools be bridged?“, *International Journal of Lifelong Education*, 28(2), pp. 137–148. doi: 10.1080/02601370902756986.
- Indiegogo (2021) *How to Write Campaign Updates Your Backers Will Love (With Templates)*. Available at: <https://entrepreneur.indiegogo.com/education/article/updates-templates/> (Accessed: 23 April 2021).
- Ingram, C. and Teigland, R. (2014) “Crowdfunding Rhetorics: A quantitative study on rhetorics used in crowdfunding pitch videos“, pp. 1–78.
- Jaaskelainen, M., Maula, M. and Seppa, T. (2006) “Allocation of Attention to Portfolio Companies and the Performance of Venture Capital Firms“, *Entrepreneurship Theory and Practice*, 30(2), pp. 185–206. doi: 10.1111/j.1540-6520.2006.00117.x.
- Jack, S. L. and Anderson, A. R. (1999) “Entrepreneurship education within the enterprise culture“, *International Journal of Entrepreneurial Behavior & Research*, 5(3), pp. 110–125. doi: 10.1108/13552559910284074.
- Jackson, D. J. (2011) “What is an innovation Ecosystem?“, pp. 1–13. Available at: http://erc-assoc.org/sites/default/files/topics/policy_studies/DJackso-n_Innovation_Ecosystem_03-15-11.pdf.

-
- Janney, J. J. and Folta, T. B. (2003) “Signaling through private equity placements and its impact on the valuation of biotechnology firms“, *Journal of Business Venturing*, 18(3), pp. 361–380. doi: 10.1016/S0883-9026(02)00100-3.
- Johnson, M. A., Stevenson, R. M. and Letwin, C. R. (2018) “A woman’s place is in the... startup! Crowdfunder judgments, implicit bias, and the stereotype content model“, *Journal of Business Venturing*, 33(6), pp. 813–831. doi: 10.1016/j.jbusvent.2018.04.003.
- Joosten, T. (2012) “Social media for educators: strategies and best practices”, Jossey-Bass.
- Jou, Y. J., Huang, C. C. L. and Cho, H. J. (2014) “A VIF-based optimization model to alleviate collinearity problems in multiple linear regression“, *Computational Statistics*, 29(6), pp. 1515–1541. doi: 10.1007/s00180-014-0504-3.
- Kang, L., Jiang, Q. and Tan, C.-H. (2017) “Remarkable advocates: An investigation of geographic distance and social capital for crowdfunding“, *Information & Management*, 54(3), pp. 336–348. doi: 10.1016/j.im.2016.09.001.
- Karimi, S. et al. (2016) “The Impact of Entrepreneurship Education: A Study of Iranian Students’ Entrepreneurial Intentions and Opportunity Identification“, *Journal of Small Business Management*, 54(1), pp. 187–209. doi: 10.1111/jsbm.12137.
- Katz, J. A. and Shepherd, D. A. (2003) “Cognitive Approaches To Entrepreneurship Research“, *Advances in Entrepreneurship, Firm Emergence and Growth*, 6(03), pp. 1–10. doi: 10.1016/S1074-7540(03)06001-X.
- Kaufman, J. C. and Sternberg, R. J. (eds) (2019) “The Cambridge Handbook of Creativity”, 2nd edn, *Cambridge Handbooks in Psychology*. 2nd edn. Cambridge: Cambridge University Press. doi: 10.1017/9781316979839.
- Kegan, R. (1994) “In over our heads : the mental demands of modern life”, Harvard University Press. Available at: <http://www.hup.harvard.edu/catalog.php?isbn=97806744445888> (Accessed: 24 February 2019).
- Keller, R. T. (2012) “Predicting the performance and innovativeness of scientists and engineers.“, *Journal of Applied Psychology*, 97(1), pp. 225–233. doi: 10.1037/a0025332.
- Kickstarter (2020a) Kickstarter - Stats.
- Kickstarter (2020b) Kickstarter – About Kickstarter. Available at: <https://www.kickstarter.com/about> (Accessed: 1 December 2020).
- Kickstarter (2020c) Kickstarter – Collections, Sections and Categories. Available at: <https://www.kickstarter.com/help/stats?ref=global-footer> (Accessed: 28 November 2020).
- Kickstarter (2020d) Why is funding all or nothing? Available at: <https://help.kickstarter.com/hc/en-us/articles/115005047893-Why-is-funding-all-or-nothing-> (Accessed: 29 November 2020).
- Kickstarter (2021a) Creator Handbook – Communicating with Backers. Available at: https://www.kickstarter.com/help/handbook/updates?ref=handbook_index (Accessed: 23 April 2021).

-
- Kickstarter (2021b) Creator Handbook – Telling your Story. Available at: https://www.kickstarter.com/help/handbook/your_story (Accessed: 28 April 2021).
- Kickstarter (2021c) Design & Tech Category. Available at: <https://www.kickstarter.com/design-tech?ref=section-homepage-nav-click-design-tech> (Accessed: 1 May 2021).
- Kickstarter (2021d) How does my project become a Project We Love or get featured on the homepage?
- Kickstarter (2021e) Kickstarter – Stats. Available at: <https://www.kickstarter.com/help/stats?ref=global-footer> (Accessed: 1 May 2021).
- Kidwell, D. K. (2013) “Principal investigators as knowledge brokers: A multiple case study of the creative actions of PIs in entrepreneurial science“, *Technological Forecasting and Social Change*, 80(2), pp. 212–220. doi: 10.1016/j.techfore.2012.05.004.
- Kim, P. H., Buffart, M. and Croidieu, G. (2016) “TMI: Signaling Credible Claims in Crowdfunding Campaign Narratives“, *Group and Organization Management*, 41(6), pp. 717–750. doi: 10.1177/1059601116651181.
- Kim, Y. and Cannella, A. A. (2008) “Toward a social capital theory of director selection“, *Corporate Governance: An International Review*, 16(4), pp. 282–293. doi: 10.1111/j.1467-8683.2008.00693.x.
- Kim, Y. K. et al. (2017) “College experiences and outcomes among international undergraduate students at research universities in the United States: A comparison to their domestic peers“, *Journal of International Students*, 7(2), pp. 395–420.
- Kirby, D. A. (2004) “Entrepreneurship education: can business schools meet the challenge?“, *Education + Training*, 46(8/9), pp. 510–519. doi: 10.1108/00400910410569632.
- Kirsch, D., Goldfarb, B. and Gera, A. (2009) “Form or substance: the role of business plans in venture capital decision making“, *Strategic Management Journal*, 30(5), pp. 487–515. doi: 10.1002/smj.751.
- Klem, A. M. and Connell, J. P. (2004) “Relationships matter: Linking teacher support to student engagement and achievement“, *Journal of School Health*, 74(7), pp. 262–273. doi: 10.1111/j.1746-1561.2004.tb08283.x.
- Klonek, F. E., Isidor, R. and Kauffeld, S. (2015) “Different Stages of Entrepreneurship: Lessons from the Transtheoretical Model of Change“, *Journal of Change Management*, 15(1), pp. 43–63. doi: 10.1080/14697017.2014.918049.
- Knight, G. A. (2001) “Entrepreneurship and strategy in the international SME“, *Journal of International Management*, 7(3), pp. 155–171. doi: 10.1016/S1075-4253(01)00042-4.
- Knight, G. A. and Liesch, P. W. (2016) “Internationalization: From incremental to born global“, *Journal of World Business*, 51(1), pp. 93–102. doi: 10.1016/j.jwb.2015.08.011.

-
- Ko, E.-J. and McKelvie, A. (2018) “Signaling for more money: The roles of founders’ human capital and investor prominence in resource acquisition across different stages of firm development“, *Journal of Business Venturing*, 33(4), pp. 438–454. doi: 10.1016/j.jbusvent.2018.03.001.
- Koch, J.-A. and Siering, M. (2019) “The recipe of successful crowdfunding campaigns“, *Electronic Markets*, 29(4), pp. 661–679. doi: 10.1007/s12525-019-00357-8.
- Koh, Y. et al. (2020) “Successful restaurant crowdfunding: the role of linguistic style“, *International Journal of Contemporary Hospitality Management*, 32(10), pp. 3051–3066. doi: 10.1108/IJCHM-02-2020-0159.
- Kolbe, R. H. and Burnett, M. S. (1991) “Research Reliability and Objectivity“, *Journal of Consumer Research*, 18(2), pp. 243–250.
- Kortleben, H. and Vollmar, B. H. (2012) „Crowdinvesting: Eine Alternative in der Gründungsfinanzierung?“, PFH Private University of Applied Sciences, Göttingen. Available at: <https://econpapers.repec.org/RePEc:zbw:pfrhps:201206>.
- Kortum, S. and Lerner, J. (2000) “Assessing the Contribution of Venture Capital to Innovation“, *The RAND Journal of Economics*, 31(4), p. 674. doi: 10.2307/2696354.
- Kourilsky, M. L. and Esfandiari, M. (1997) “Entrepreneurship education and lower socioeconomic black youth: an empirical investigation“, *Urban Review*, 29(3), pp. 205–215. doi: 10.1023/A:1024629027806.
- Kozlowski, S. W. J. and Ilgen, D. R. (2006) “Enhancing the Effectiveness of Work Groups and Teams“, *Psychological Science in the Public Interest*, 7(3), pp. 77–124. doi: 10.1111/j.1529-1006.2006.00030.x.
- Krippendorff, K. (1989) “Emerging trends in content analysis“, *International Encyclopedia of Communication*, 1, pp. 401–407. Available at: http://repository.upenn.edu/asc_papers/226.
- Krippendorff, K. (2004) *Content Analysis: An Introduction to its Methodology*. Sage Publications Ltd; 2. Edition (19. Februar 2004).
- Kromidha, E. and Robson, P. (2016a) “Social identity and signalling success factors in online crowdfunding“, *Entrepreneurship and Regional Development*, 28(9–10). doi: 10.1080/08985626.2016.1198425.
- Kuh, G. D. (2001) “Assessing What Really Matters to Student Learning Inside The National Survey of Student Engagement“, *Change: The Magazine of Higher Learning*, 33(3), pp. 10–17. doi: 10.1080/00091380109601795.
- Kuh, G. D. et al. (2010) “Student success in college : creating conditions that matter“, Available at: <https://www.wiley.com/en-us/Student+Success+in+College%3A+Creating+Conditions+That+Matter%2C+%28Includes+New+Preface+and+Epilogue%29-p-9780470599099> (Accessed: 28 February 2019).
- Kunz, M. M. et al. (2017) “An empirical investigation of signaling in reward-based crowdfunding“, *Electronic Commerce Research*, 17(3), pp. 425–461. doi: 10.1007/s10660-016-9249-0.

-
- Kuppuswamy, V. and Bayus, B. L. (2013) "Crowdfunding Creative Ideas: The Dynamics of Project Backers in Kickstarter", SSRN Electronic Journal. doi: 10.2139/ssrn.2234765.
- Kuppuswamy, V. and Bayus, B. L. (2017) "Does my contribution to your crowdfunding project matter?", *Journal of Business Venturing*, 32(1), pp. 72–89. doi: 10.1016/j.jbusvent.2016.10.004.
- Kushev, T., Ahuja, M. K. and Carter, R. E. (2019) "A Social Cognitive Perspective on Opportunity Evaluation", *Journal of Entrepreneurship*, 28(1), pp. 35–67. doi: 10.1177/0971355718810570.
- Kyrö, R. and Artto, K. (2015) "The Development Path of an Academic Co-working Space on Campus - Case Energy Garage", *Procedia Economics and Finance*, 21, pp. 431–438. doi: 10.1016/S2212-5671(15)00196-3.
- Lagazio, C. and Querci, F. (2018) "Exploring the multi-sided nature of crowdfunding campaign success", *Journal of Business Research*, 90, pp. 318–324. doi: 10.1016/j.jbusres.2018.05.031.
- Lampel, J. and Shamsie, J. (2000) "Critical Push: Strategies for Creating Momentum in the Motion Picture Industry", *Journal of Management*, 26(2), pp. 233–257. doi: 10.1177/014920630002600204.
- Lappalainen, H. (2018) "Towards Innovation Competences: a Finnish Perspective", in *Proceedings of the 1st International Conference on Early Childhood and Primary Education (ECPE 2018)*. Paris, France: Atlantis Press. doi: 10.2991/ecpe-18.2018.14.
- Laredo, P. (2007) "Revisiting the Third Mission of Universities: Toward a Renewed Categorization of University Activities?", *Higher Education Policy*, 20, pp. 441–456. doi: 10.1057/palgrave.hep.8300169.
- Lawshe, C. H. (1975) "A QUANTITATIVE APPROACH TO CONTENT VALIDITY", *Personnel Psychology*, 28(4), pp. 563–575. doi: 10.1111/j.1744-570.1975.tb01393.x.
- Leicht, R. M., Messner, J. I. and Anumba, C. J. (2009) "A FRAMEWORK FOR USING INTERACTIVE WORKSPACES FOR EFFECTIVE COLLABORATION", *Journal of Information Technology in Construction*, 14, pp. 180–203. Available at: <http://www.itcon.org/2009/15> (Accessed: 28 February 2019).
- Leimeister, J. M. (2010) "Collective Intelligence", *Business & Information Systems Engineering*, 2(4), pp. 245–248. doi: 10.1007/s12599-010-0114-8.
- Leimeister, J. M. (2012) "Crowdsourcing: Crowdfunding, Crowdvoting, Crowdcreation", *Controlling & Management*, 56(6), pp. 388–392. doi: 10.1365/s12176-012-0662-5.
- Lelo de Larrea, G., Altin, M. and Singh, D. (2019) "Determinants of success of restaurant crowdfunding", *International Journal of Hospitality Management*, 78, pp. 150–158. doi: 10.1016/j.ijhm.2018.10.003.
- Lengelle, R. et al. (2016) "Career writing as a dialogue about work experience: A recipe for luck readiness?", *International Journal for Educational and Vocational Guidance*, 16(1), pp. 29–43. doi: 10.1007/s10775-014-9283-1.

-
- Leong, L.-Y. et al. (2013) “Predicting the determinants of the NFC-enabled mobile credit card acceptance: A neural networks approach“, *Expert Systems with Applications*, 40(14), pp. 5604–5620. doi: 10.1016/J.ESWA.2013.04.018.
- Li, J. (Jason) et al. (2017) “Catching fire and spreading it: A glimpse into displayed entrepreneurial passion in crowdfunding campaigns.“, *Journal of Applied Psychology*, 102(7), pp. 1075–1090. doi: 10.1037/apl0000217.
- Liang, X., Hu, X. and Jiang, J. (2020) “Research on the effects of information description on crowdfunding success within a sustainable economy-the perspective of information communication“, *Sustainability (Switzerland)*, 12(2). doi: 10.3390/su12020650.
- Liao, C., Zhu, Y. and Liao, X. (2015) “The role of internal and external social capital in crowdfunding: Evidence from China“, *Revista de Cercetare si Interventie Sociala*, 49(JUNE), pp. 187–204.
- Liefner, I. and Schiller, D. (2008) “Academic capabilities in developing countries—A conceptual framework with empirical illustrations from Thailand“, *Research Policy*, 37(2), pp. 276–293. doi: 10.1016/j.respol.2007.08.007.
- Liguori, E. and Winkler, C. (2020) “From Offline to Online: Challenges and Opportunities for Entrepreneurship Education Following the COVID-19 Pandemic“, *Entrepreneurship Education and Pedagogy*, 3(4), pp. 346–351. doi: 10.1177/2515127420916738.
- Lin, M., Prabhala, N. R. and Viswanathan, S. (2013) “Judging Borrowers by the Company They Keep: Friendship Networks and Information Asymmetry in Online Peer-to-Peer Lending“, *Management Science*, 59(1), pp. 17–35. doi: 10.1287/mnsc.1120.1560.
- Lindgaard, G. et al. (2006) “Attention web designers: You have 50 milliseconds to make a good first impression!“, *Behaviour and Information Technology*, 25(2), pp. 115–126. doi: 10.1080/01449290500330448.
- Littunen, H. and Niittykangas, H. (2010) “The rapid growth of young firms during various stages of entrepreneurship“, *Journal of Small Business and Enterprise Development*, 17(1), pp. 8–31. doi: 10.1108/14626001011019107.
- Liu, D. et al. (2016) “Motivational mechanisms of employee creativity: A meta-analytic examination and theoretical extension of the creativity literature“, *Organizational Behavior and Human Decision Processes*, 137, pp. 236–263. doi: 10.1016/j.obhdp.2016.08.001.
- Liu, S. S. and Stout, P. A. (1987) “Effects of Message Modality and Appeal on Advertising Acceptance“, *Psychology & Marketing*, 4(3), pp. 167–187. doi: 10.1002/mar.4220040303.
- Löbbecke, C. (2006) “Digitalisierung - Technologien und Unternehmensstrategien“, *Handbuch Medienmanagement*.
- Locke, E. A. (2000) “The Prime Movers: Traits of the Great Wealth Creators“, in:
- Locke, E. A. and Baum, J. R. (2007) “Entrepreneurial Motivation.“, *The psychology of entrepreneurship*. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers (The organizational frontiers.), pp. 93–112.

-
-
- Loewenstein, G., Sunstein, C. R. and Golman, R. (2014) “Disclosure: Psychology Changes Everything“, *Annual Review of Economics*, 6(1), pp. 391–419. doi: 10.1146/annurev-economics-080213-041341.
- Loewenstein, J. and Mueller, J. (2016) “Implicit Theories of Creative Ideas: How Culture Guides Creativity Assessments“, *Academy of Management Discoveries*, 2(4), pp. 320–348. doi: 10.5465/amd.2014.0147.
- Lombard, M., Snyder-Duch, J. and Bracken, C. C. (2002) “Content Analysis in Mass Communication“, *Human Communication Research*, 28(4), pp. 587–604.
- Lukkarinen, A. et al. (2016) “Success drivers of online equity crowdfunding campaigns“, *Decision Support Systems*, 87, pp. 26–38. doi: 10.1016/j.dss.2016.04.006.
- MacKinnon, D. P. (1978) “In Search of human Effectiveness: Identifying and developing Creativity”, 1st edn. Buffalo: Creative Education Foundation.
- Magyari-Beck, I. (1990) “An Introduction to the Framework of Creatology*“, *The Journal of Creative Behavior*, 24(3), pp. 151–160. doi: 10.1002/j.2162-6057.1990.tb00537.x.
- Mäkelä, M. M. and Maula, M. V. J. (2006) “Interorganizational commitment in syndicated cross-border venture capital investments“, *Entrepreneurship: Theory and Practice*, 30(2), pp. 273–298. doi: 10.1111/j.1540-6520.2006.00121.x.
- Malal, J. (2014) “Why do you write this? Prediction of influencers from word use“, in *Eighth International AAAI Conference on Weblogs and Social Media*.
- Malecki, E. J. (1997) “Technology and Economic Development: The Dynamics of Local, Regional, and National Change“.
- Mamonov, S. and Malaga, R. (2020) “A 2020 perspective on Success factors in Title III equity crowdfunding in the United States“, *Electronic Commerce Research and Applications*, 40. doi: 10.1016/j.elerap.2020.100933.
- Manimala, M. J. (2008) “Creativity and entrepreneurship“, *The Routledge Companion to Creativity*, 2(4), pp. 119–131. doi: 10.4324/9780203888841-17.
- Mars, M. M., Slaughter, S. and Rhoades, G. (2008) “The State-Sponsored Student Entrepreneur“, *The Journal of Higher Education*, 79(6), pp. 638–670. doi: 10.1080/00221546.2008.11772122.
- Martens, M. L., Jennings, J. E. and Jennings, P. D. (2007) “Do the Stories They tell get them the Money They Need? The Role of Entrepreneurial Narratives in Resource Acquisition“, *Academy of Management Journal*, 50(5), pp. 1107–1132. doi: 10.5465/amj.2007.27169488.
- Martin, B. C., McNally, J. J. and Kay, M. J. (2013) “Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes“, *Journal of Business Venturing*, 28(2), pp. 211–224. doi: 10.1016/j.jbusvent.2012.03.002.

-
- Mason, C. and Brown, R. (2014) “Entrepreneurial ecosystems and growth oriented entrepreneurship. Final Report to OECD, Paris.” Available at: <http://lib.davender.com/wp-content/uploads/2015/03/Entrepreneurial-ecosystems-OECD.pdf>.
- Mason, C. M. and Harrison, R. T. (1996) “Why Business Angels say No“, *International Small Business Journal*, pp. 35–51.
- Mason, C. and Stark, M. (2004) “What do investors look for in a business plan? A comparison of the investment criteria of bankers, venture capitalists and business angels“, *International Small Business Journal*, 22(3), pp. 227–248. doi: 10.1177/0266242604042377.
- Massolution (2015) “Massolution-The Crowdfunding Industry Report - 2015“, Massolution, pp. 1–97. Available at: <http://www.crowdsourcing.org/editorial/2013cf-the-crowdfunding-industry-report/25107>.
- Mastrangelo, L., Cruz-Ros, S. and Miquel-Romero, M. J. (2019) “Crowdfunding success: the role of co-creation, feedback, and corporate social responsibility“, *International Journal of Entrepreneurial Behaviour and Research*, 26(3), pp. 449–466. doi: 10.1108/IJEBr-06-2019-0391.
- Maxwell, A. L., Jeffrey, S. A. and Lévesque, M. (2011) “Business angel early stage decision making“, *Journal of Business Venturing*, 26(2), pp. 212–225. doi: 10.1016/j.jbusvent.2009.09.002.
- Maxwell, A. L. and Lévesque, M. (2014) “Trustworthiness: A Critical Ingredient for Entrepreneurs Seeking Investors“, *Entrepreneurship Theory and Practice*, 38(5), pp. 1057–1080. doi: 10.1111/j.1540-6520.2011.00475.x.
- Mayer, R. E., Heiser, J. and Lonn, S. (2001) “Cognitive constraints on multimedia learning: When presenting more material results in less understanding.“, *Journal of Educational Psychology*, 93(1), pp. 187–198. doi: 10.1037/0022-0663.93.1.187.
- Mayhew, M. J. et al. (2012) “Exploring Innovative Entrepreneurship and Its Ties to Higher Educational Experiences“, *Research in Higher Education*, 53(8), pp. 831–859. doi: 10.1007/s11162-012-9258-3.
- Mayhew, M. J. et al. (2016) *How college affects students: 21st century evidence that higher education works* (3rd ed.). San Francisco: Jossey-Bass.
- McCarthy, A. M., Schoorman, F. D. and Cooper, A. C. (1993) “Reinvestment decisions by entrepreneurs: Rational decision-making or escalation of commitment?“, *Journal of Business Venturing*, 8(1), pp. 9–24. doi: 10.1016/0883-9026(93)90008-S.
- McKenny, A. F. et al. (2017) “How Should Crowdfunding Research Evolve? A Survey of the Entrepreneurship Theory and Practice Editorial Board“, *Entrepreneurship: Theory and Practice*, 41(2), pp. 291–304. doi: 10.1111/etap.12269.
- McKenny, A. F., Short, J. C. and Payne, G. T. (2013) “Using Computer-Aided Text Analysis to Elevate Constructs: An Illustration Using Psychological Capital“, *Organizational Research Methods*, 16(1), pp. 152–184. doi: 10.1177/1094428112459910.

-
- McMullan, W. Ed and Long, W. A. (1987) "Entrepreneurship education in the nineties", *Journal of Business Venturing*, 2(3), pp. 261–275. doi: 10.1016/0883-9026(87)90013-9.
- Mentoor, E. R. and Friedrich, C. (2007) "Is Entrepreneurial Education at South African Universities Successful?: An Empirical Example", *Industry and Higher Education*, 21(3), pp. 221–232. doi: 10.5367/000000007781236862.
- Meoli, M., Paleari, S. and Vismara, S. (2019) "The governance of universities and the establishment of academic spin-offs", *Small Business Economics*, 52(2), pp. 485–504. doi: 10.1007/s11187-017-9956-5.
- Milgrom, P. R. (1981) "Good News and Bad News: Representation Theorems and Applications", *The Bell Journal of Economics*, 12(2), p. 380. doi: 10.2307/3003562.
- Miller, D. J. and Acs, Z. J. (2017) "The campus as entrepreneurial ecosystem: the University of Chicago", *Small Business Economics*, 49(1), pp. 75–95. doi: 10.1007/s11187-017-9868-4.
- Minola, T., Donina, D. and Meoli, M. (2016) "Students climbing the entrepreneurial ladder: Does university internationalization pay off?", *Small Business Economics*, 47(3), pp. 565–587. doi: 10.1007/s11187-016-9758-1.
- Mittiness, C. R., Baucus, M. S. and Sudek, R. (2012) "Horse vs. Jockey? How stage of funding process and industry experience affect the evaluations of angel investors", *Venture Capital*, 14(4), pp. 241–267. doi: 10.1080/13691066.2012.689474.
- Mittiness, C., Sudek, R. and Cardon, M. S. (2012) "Angel investor characteristics that determine whether perceived passion leads to higher evaluations of funding potential", *Journal of Business Venturing*, 27(5), pp. 592–606. doi: 10.1016/j.jbusvent.2011.11.003.
- Mochkabadi, K. and Volkmann, C. K. (2020) "Equity crowdfunding: a systematic review of the literature", *Small Business Economics*, 54(1), pp. 75–118. doi: 10.1007/s11187-018-0081-x.
- Mollick, E. (2014) "The dynamics of crowdfunding: An exploratory study", *Journal of Business Venturing*, 29(1), pp. 1–16. doi: 10.1016/j.jbusvent.2013.06.005.
- Mollick, E. and Nanda, R. (2016) "Wisdom or madness? Comparing crowds with expert evaluation in funding the arts", *Management Science*, 62(6), pp. 1533–1553. doi: 10.1287/mnsc.2015.2207.
- Mollick, E. R. and Kuppuswamy, V. (2014) "After the Campaign: Outcomes of Crowdfunding", *Ssrn*, pp. 1–18. doi: 10.2139/ssrn.2376997.
- Moritz, A. and Block, J. H. (2016) "Crowdfunding: A Literature Review and Research Directions", in Brüntje, D. and Oliver, G. (eds) *Crowdfunding in Europe. State of the Art in Theory and Practice In association with the European Crowdfunding Network*. Springer, Cham, pp. 25–53. doi: 10.1007/978-3-319-18017-5_3.
- Morris, R. D. (1987) "Signalling, Agency Theory and Accounting Policy Choice", *Accounting and Business Research*, 18(69), pp. 47–56. doi: 10.1080/00014788.1987.9729347.

-
- Moss, T. W., Neubaum, D. O. and Meyskens, M. (2015) "The Effect of Virtuous and Entrepreneurial Orientations on Microfinance Lending and Repayment: A Signaling Theory Perspective", *Ssrn*, pp. 27–52. doi: 10.1111/etap.12110.
- Moy, N., Chan, H. F. and Torgler, B. (2018) "How much is too much? The effects of information quantity on crowdfunding performance", *PLoS ONE*, 13(3), pp. 40–41. doi: 10.1371/journal.pone.0192012.
- Mudambi, S. M. and Schuff, D. (2010) "What Makes a Helpful Online Review? A Study of Customer Reviews on Amazon.com", *MIS Quarterly*, 34(1), pp. 185–200. doi: 10.2307/20721420.
- Mueller, S. (2008) "Encouraging Future Entrepreneurs: The Effect of Entrepreneurship Course Characteristics on Entrepreneurial Intention".
- Mumford, M. D. et al. (1991) "Process analytic models of creative capacities", *Creativity Research Journal*, 4, pp. 91–122.
- Mumford, M. D. et al. (1997) "Process-based measures of creative problem solving skills", *Creativity Research Journal*, pp. 73–85.
- Myers, S. C. and Majluf, N. S. (1984) "Corporate financing and investment decisions when firms have information that investors do not have", *Journal of Financial Economics*, 13(2), pp. 187–221. doi: 10.1016/0304-405X(84)90023-0.
- Nahapiet, J. and Ghoshal, S. (1998) "Social Capital, Intellectual Capital, and the Organizational Advantage", *The Academy of Management Review*, 23(2), p. 242. doi: 10.2307/259373.
- Narayanan, M. P. (1988) "Debt Versus Equity under Asymmetric Information", *The Journal of Financial and Quantitative Analysis*, 23(1), p. 39. doi: 10.2307/2331023.
- Neck, H. M. and Greene, P. G. (2011) "Entrepreneurship Education: Known Worlds and New Frontiers", *Journal of Small Business Management*, 49(1), pp. 55–70. doi: 10.1111/j.1540-627X.2010.00314.x.
- Neeley, L. and Van Auken, H. (2010) "DIFFERENCES BETWEEN FEMALE AND MALE ENTREPRENEURS" USE OF BOOTSTRAP FINANCING", *Journal of Developmental Entrepreneurship*, 15(01), pp. 19–34. doi: 10.1142/S1084946710001439.
- Negro, G., Hannan, M. T. and Fassiotto, M. (2015) "Category Signaling and Reputation", *Organization Science*, 26(2), pp. 584–600. doi: 10.1287/orsc.2014.0935.
- Neuendorf, K. A. (2002) "The content analysis guidebook." Thousand Oaks, Calif: SAGE Publications.
- Nijkamp, P. (2003) "Entrepreneurship in a Modern Network Economy", *Regional Studies*, 37(4), pp. 395–405. doi: 10.1080/0034340032000074424.
- Nonaki, I. (1991) "The Knowledge Creating Company", in *Havard Business Review*. 69th edn, pp. 96–104.
- Norwani, N. M. (2009) "Learning Outcomes at Higher Education Institutions: To What Extent Do Institutional Environments Contribute ?", *Journal of Human Resource and Adult Learning*, 5(June), pp. 84–94.

-
- O'Brien, R. M. (2007) "A Caution Regarding Rules of Thumb for Variance Inflation Factors", *Quality & Quantity*, 41(5), pp. 673–690. doi: 10.1007/s11135-006-9018-6.
- Okpara, F. O. (2007) "The place of creativity and intelligence in technical vocational education and training towards national development", *Journal of Asia Entrepreneurship and Sustainability*, 3(2).
- Oosterbeek, H., van Praag, M. and Ijsselstein, A. (2010) "The impact of entrepreneurship education on entrepreneurship skills and motivation", *European Economic Review*, 54(3), pp. 442–454. doi: 10.1016/j.euroecorev.2009.08.002.
- Ordanini, A. et al. (2011) "Crowd-funding: transforming customers into investors through innovative service platforms", *Journal of Service Management*. Edited by R. P. Fisk, 22(4), pp. 443–470. doi: 10.1108/09564231111155079.
- Van Osnabrugge, M. S. (2000) "A Comparison of Business Angel and Venture Capital Investment Procedures", *Venture Capital: An International Journal of Entrepreneurial Finance*, 2, pp. 91–109.
- Ozmel, U., Reuer, J. J. and Gulati, R. (2013) "Signals across Multiple Networks: How Venture Capital and Alliance Networks Affect Interorganizational Collaboration", *Academy of Management Journal*, 56(3), pp. 852–866. doi: 10.5465/amj.2009.0549.
- Paivio, A. and Csapo, K. (1973) "Picture superiority in free recall: Imagery or dual coding?", *Cognitive Psychology*, 5(2), pp. 176–206. doi: 10.1016/0010-0285(73)90032-7.
- Parhankangas, A. and Ehrlich, M. (2014) "How entrepreneurs seduce business angels: An impression management approach", *Journal of Business Venturing*, 29(4), pp. 543–564. doi: 10.1016/j.jbusvent.2013.08.001.
- Parhankangas, A. and Renko, M. (2017) "Linguistic style and crowdfunding success among social and commercial entrepreneurs", *Journal of Business Venturing*, 32(2), pp. 215–236. doi: 10.1016/j.jbusvent.2016.11.001.
- Pascarella, E. T. et al. (2004) "First-Generation College Students: Additional Evidence on College Experiences and Outcomes", *The Journal of Higher Education*, 75(3), pp. 249–284. doi: 10.1353/jhe.2004.0016.
- Pascarella, E. T. et al. (2014) "Effects of diversity experiences on critical thinking skills over 4 years of college", *Journal of College Student Development*, 55(1), pp. 86–92. doi: 10.1353/csd.2014.0009.
- Pascarella, E. T. and Pascarella, E. T. (2006) "How College Affects Students : Ten Directions for Future Research How College Affects Students : Ten Directions for Future Research", 47(5), pp. 508–520. doi: 10.1353/csd.2006.0060.
- Pascarella, E. T. and Terenzini, P. T. (1991) "How college affects students: Findings and insights from twenty years of research", San Francisco: Jossey-Bass.
- Passaro, R., Quinto, I. and Thomas, A. (2018) "The impact of higher education on entrepreneurial intention and human capital", *Journal of Intellectual Capital*, 19(1), pp. 135–156. doi: 10.1108/JIC-04-2017-0056.

-
-
- Patzelt, H. et al. (2008) “Financial slack and venture managers“ decisions to seek a new alliance“, *Journal of Business Venturing*, 23(4), pp. 465–481. doi: 10.1016/j.jbusvent.2007.06.001.
- Pennebaker, J. W., Mehl, M. R. and Niederhoffer, K. G. (2003) “Psychological Aspects of Natural Language Use: Our Words, Our Selves“, *Annual Review of Psychology*, 54, pp. 547–577. doi: 10.1146/annurev.psych.54.101601.145041.
- Penttila, T. and Lyytinen, S. (2015) “How To Educate Somebody To Be Innovative? Developing and Measuring Innovation Competences in University-Company Co-Operation“, *Edulearn15: 7Th International Conference on Education and New Learning Technologies*, pp. 163–169.
- Peramunetilleke, D. and Wong, R. K. (2002) “Currency Exchange Rate Forecasting from News Headlines“, *Aust. Comput. Sci. Commun.*, 24(2), pp. 131–139.
- Pérez-Llantada, C. (2021) “Grammar features and discourse style in digital genres: The case of science-focused crowdfunding projects“, *Revista signos*, 54(105), pp. 73–96. doi: 10.4067/s0718-09342021000100073.
- Perkmann, M. et al. (2013) “Academic engagement and commercialisation: A review of the literature on university–industry relations“, *Research Policy*, 42(2), pp. 423–442. doi: 10.1016/j.respol.2012.09.007.
- Peterson, C. and Seligman, M. E. P. (2004) “Character strengths and virtues: A handbook and classification“, *Character strengths and virtues: A handbook and classification*. New York, NY, US: Oxford University Press.
- Petitjean, M. (2018) “What explains the success of reward-based crowdfunding campaigns as they unfold? Evidence from the French crowdfunding platform KissKissBankBank“, *Finance Research Letters*, 26, pp. 9–14. doi: 10.1016/j.frl.2017.11.005.
- Petty, R. E. and Cacioppo, J. T. (1986) “The Elaboration Likelihood Model of Persuasion“, in, pp. 123–205. doi: 10.1016/S0065-2601(08)60214-2.
- Phan, P., Zhou, J. and Abrahamson, E. (2010) “Creativity, innovation, and entrepreneurship in China“, *Management and Organization Review*, 6(2), pp. 175–194. doi: 10.1111/j.1740-8784.2010.00181.x.
- Pietraszkiewicz, A., Soppe, B. and Formanowicz, M. (2017) “Go Pro Bono Prosocial Language as a Success Factor in Crowdfunding“, *Social Psychology*, 48(5), pp. 265–278. doi: 10.1027/1864-9335/a000319.
- Piezunka, H. and Dahlander, L. (2015) “Distant Search, Narrow Attention: How Crowding Alters Organizations’ Filtering of Suggestions in Crowdsourcing“, *Academy of Management Journal*, 58(3), pp. 856–880. doi: 10.5465/amj.2012.0458.
- Pingree, A. and Zakrajsek, T. (2019) Encouraged student-faculty interaction outside of class. Available at: <https://www.ideaedu.org/Resources-Events/Teaching-Learning-Resources/Encouraged-student-faculty-interaction-outside-of-class#133357-why-this-matters> (Accessed: 27 February 2018).

-
- Piperopoulos, P. and Dimov, D. (2015) “Burst Bubbles or Build Steam? Entrepreneurship Education, Entrepreneurial Self-Efficacy, and Entrepreneurial Intentions“, *Journal of Small Business Management*, 53(4), pp. 970–985. doi: 10.1111/jsbm.12116.
- Pittaway, L. and Cope, J. (2007) “Entrepreneurship Education“, *International Small Business Journal: Researching Entrepreneurship*, 25(5), pp. 479–510. doi: 10.1177/0266242607080656.
- Plaschka, G. R. and Welsch, H. P. (1990) “Emerging Structures in Entrepreneurship Education: Curricular Designs and Strategies“, *Entrepreneurship Theory and Practice*, 14(3), pp. 55–71. doi: 10.1177/104225879001400308.
- Van Praag, C. M. and Versloot, P. H. (2007) “What is the value of entrepreneurship? A review of recent research“, *Small Business Economics*, 29(4), pp. 351–382. doi: 10.1007/s11187-007-9074-x.
- Purzer, S., Fila, N. D. and Mathis, P. D. (2014) “CAREER: A Study of How Engineering Students Approach Innovation“, pp. 1–6.
- Quadrini, V. (2000) “Entrepreneurship, Saving, and Social Mobility“, *Review of Economic Dynamics*, 3(1), pp. 1–40. doi: 10.1006/redy.1999.0077.
- Ramaswami, A. et al. (2010) “GENDER, MENTORING, AND CAREER SUCCESS: THE IMPORTANCE OF ORGANIZATIONAL CONTEXT“, *Personnel Psychology*, 63(2), pp. 385–405. doi: 10.1111/j.1744-6570.2010.01174.x.
- Rampersad, G. C. (2015) “Building University Innovation Ecosystems: The Role of Work Integrated Learning as a Core Element in the University- Industry Nexus“, 4(1), pp. 231–240.
- Rasmussen, A. and Nybye, N. (2013) “Entrepreneurship education: progression model“, Odense: Young Enterprise Denmark. Lokaliseret på dansk den, 25.
- Ratten, V. (2021) “COVID-19 and entrepreneurship: Future research directions“, *Strategic Change*, 30(2), pp. 91–98. doi: 10.1002/jsc.2392.
- Reichert, S. (2019) “The Role of Universities in Regional Innovation Ecosystems“, *European University Association 2019*, (March), p. 102.
- Reuber, A. R. et al. (2018) “International entrepreneurship: The pursuit of entrepreneurial opportunities across national borders“, *Journal of International Business Studies*, 49(4), pp. 395–406. doi: 10.1057/s41267-018-0149-5.
- Reynolds, P., Storey, D. J. and Westhead, P. (1994) “Cross-national Comparisons of the Variation in New Firm Formation Rates“, *Regional Studies*, 28(4), pp. 443–456. doi: 10.1080/00343409412331348386.
- Rhodes, M. (1961) “An Analysis of Creativity“, *The Phi Delta Kappan*, 42(7), pp. 305–310. Available at: <http://www.jstor.org/stable/20342603>.
- Robb, A. M. and Robinson, D. T. (2014) “The Capital Structure Decisions of New Firms“, *Review of Financial Studies*, 27(1), pp. 153–179. doi: 10.1093/rfs/hhs072.

- Roma, P., Messeni Petruzzelli, A. and Perrone, G. (2017) “From the crowd to the market: The role of reward-based crowdfunding performance in attracting professional investors“, *Research Policy*, 46(9), pp. 1606–1628. doi: 10.1016/j.respol.2017.07.012.
- Ronstadt, R., Vesper, K. H. and McMullan, W. E. (1988) “Entrepreneurship: Today Courses, Tomorrow Degrees?“, *Entrepreneurship Theory and Practice*, 13(1), pp. 7–13. doi: 10.1177/104225878801300102.
- Rossi, M. (2014) “The New Ways to Raise Capital: An Exploratory Study of Crowdfunding“, *International Journal of Financial Research*, 5(2). doi: 10.5430/ijfr.v5n2p8.
- Runco, M. A. and Chand, I. (1995) “Cognition and creativity“, *Educational Psychology Review*, 7(3), pp. 243–267. doi: 10.1007/BF02213373.
- Runco, M. A. and Nemiro, J. (1994) “Problem finding, creativity, and giftedness“, *Roeper Review*, 16(4), pp. 235–241. doi: 10.1080/02783199409553588.
- Runco, M., Nemiro, J. and Walberg, H. J. (1998) “Personal Explicit Theories of Creativity“, *Journal of Creative Behavior*, 32(1), pp. 1–17.
- Salido-Andres, N. et al. (2021) “Mapping the Field of Donation-Based Crowdfunding for Charitable Causes: Systematic Review and Conceptual Framework“, *Voluntas*, 32(2), pp. 288–302. doi: 10.1007/s11266-020-00213-w.
- Sandouka, K. (2019) “Text analysis of crowdfunding: A literature review“, 25th Americas Conference on Information Systems, AMCIS 2019, pp. 2014–2018.
- Sauerwald, S., Lin, Z. J. and Peng, M. W. (2016) “Board social capital and excess CEO returns“, *Strategic Management Journal*, 37(3), pp. 498–520. doi: 10.1002/smj.2339.
- Sax, L. J. (2008) “The gender gap in college: Maximizing the development potential of women and men“, San Francisco: Jossey-Bass.
- Schäfer, M. S. et al. (2018) “Selling science 2.0: What scientific projects receive crowdfunding online?“, *Public Understanding of Science*, 27(5), pp. 496–514. doi: 10.1177/0963662516668771.
- Schjoedt, L. and Shaver, K. G. (2004) “Does the potential for increased work and life satisfaction affect the decision to pursue an entrepreneurial career? An examination of the PSED data“, in *First Annual Clemson/Kauffman Symposium on the PSED*. Clemson, South Carolina.
- Schumpeter, J. (1911) „*Theorie der wirtschaftlichen Entwicklung*“, Berlin: Duncker und Humblot.
- Schumpeter, J. A. (1934) “*The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*“, Cambridge, MA: Harvard University Press.
- Schumpeter, J. A. (1947) “*Capitalism, Socialism, and Democracy*“, New York and London: Harper and Crothers Publishers.

-
- Schwienbacher, A. (2007) "A theoretical analysis of optimal financing strategies for different types of capital-constrained entrepreneurs", *Journal of Business Venturing*, 22(6), pp. 753–781. doi: 10.1016/j.jbusvent.2006.07.003.
- Schwienbacher, A. and Larralde, B. (2012) "Crowdfunding of Small Entrepreneurial Ventures", *SSRN Electronic Journal*, 2010. doi: 10.2139/ssrn.1699183.
- Selznick, B. (2017) "Higher Education for Undergraduate Innovation", *School of Strategic Leadership Studies - Faculty Scholarship*. Available at: <https://commons.lib.jmu.edu/sls/1> (Accessed: 24 February 2019).
- Selznick, B. S. (2019) "Developing innovators: Preparing 21st century graduates for the idea economy", in T. Trolan & E. Jach (Eds.), *New Directions for Higher Education*, 181 (pp. 81-90). Wiley.
- Selznick, B. S. and Mayhew, M. J. (2018) "Measuring Undergraduates' Innovation Capacities", *Research in Higher Education*, 59(6), pp. 744–764. doi: 10.1007/s11162-017-9486-7.
- Shahab, Y. et al. (2019) "Individual's financial investment decision-making in reward-based crowdfunding: evidence from China", *Applied Economics Letters*, 26(4), pp. 261–266. doi: 10.1080/13504851.2018.1464643.
- Shane, S. and Eckhardt, J. (2005) "The Individual-Opportunity Nexus", in *Handbook of Entrepreneurship Research*. New York: Springer-Verlag, pp. 161–191. doi: 10.1007/0-387-24519-7_8.
- Shane, S. and Venkataraman, S. (2000) "The Promise of Entrepreneurship as a Field of Research", *The Academy of Management Review*, 25(1), p. 217. doi: 10.2307/259271.
- Shapira, P. and Wang, J. (2009) "From lab to market? Strategies and issues in the commercialization of nanotechnology in China", *Asian Business & Management*, 8(4), pp. 461–489. doi: 10.1057/abm.2009.15.
- Shepherd, D. A., Patzelt, H. and Wolfe, M. (2011) "Moving Forward from Project Failure: Negative Emotions, Affective Commitment, and Learning from the Experience", *Academy of Management Journal*, 54(6), pp. 1229–1259. doi: 10.5465/amj.2010.0102.
- Shi, M. and Guan, L. (2016) "An Empirical Study of Crowdfunding Campaigns: Evidence From Jing Dong Crowdfunding Platform", in Yang, BJ and Chen, J and Cai, XQ and Qin, KD and Zhou, C (ed.) 2016 13TH INTERNATIONAL CONFERENCE ON SERVICE SYSTEMS AND SERVICE MANAGEMENT. 345 E 47TH ST, NEW YORK, NY 10017 USA: IEEE (International Conference on Service Systems and Service Management).
- Shneiderman, B. (2007) "Accelerating Discovery and Innovation", *Communications of the ACM*, 50(12), pp. 20–32. Available at: <http://dl.acm.org/citation.cfm?id=1323689>.
- Shneor, R. and Vik, A. A. (2020) "Crowdfunding success: a systematic literature review 2010–2017", *Baltic Journal of Management*, 15(2), pp. 149–182. doi: 10.1108/BJM-04-2019-0148.

-
- Short, J. C. et al. (2010) “Construct validation using computer-aided text analysis (CATA): An illustration using entrepreneurial orientation“, *Organizational Research Methods*, 13(2), pp. 320–347. doi: 10.1177/1094428109335949.
- Šliogerienė, J. and Stunžaitė, A. (2019) “The perception of creative verbal communication in idiomaticity“, *Creativity Studies*, 12(2), pp. 376–393. doi: 10.3846/cs.2019.11492.
- Spence, M. (1973) “Job Market Signaling“, *The Quarterly Journal of Economics*, 87(3), p. 355. doi: 10.2307/1882010.
- Spence, M. (1974) “Market Signaling: Informational Transfer in Hiring and Related Screening Processes“, Harvard University Press.
- Spence, M. (2002) “Signaling in Retrospect and the Informational Structure of Markets“, *The American Economic Review*, 92(3), pp. 434–459. Available at: <http://www.jstor.org/stable/3083350>.
- Spigel, B. (2017) “The Relational Organization of Entrepreneurial Ecosystems“, *Entrepreneurship: Theory and Practice*, 41(1), pp. 49–72. doi: 10.1111/etap.12167.
- Stanko, M. A. and Henard, D. H. (2017) “Toward a better understanding of crowdfunding, openness and the consequences for innovation“, *Research Policy*, 46(4), pp. 784–798. doi: 10.1016/j.respol.2017.02.003.
- Stanko, M. and Henard, D. (2016) “How Crowdfunding Influences Innovation“, *MIT Sloan Management Review*, 57.
- Stedler, H. R. and Peters, H. H. (2003) “Business angels in Germany: An empirical study“, *Venture Capital*, 5(3), pp. 269–276. doi: 10.1080/1369106032000126596.
- Sternberg, R. J. (1988) “A three-facet model of creativity.“, *The nature of creativity: Contemporary psychological perspectives*. New York, NY, US: Cambridge University Press, pp. 125–147.
- Stevenson, H. H. (1985) “New business ventures and the entrepreneur“, 2nd ed, Edited by M. J. Roberts and H. I. Grousbeck. Irwin.
- Stone, G., Besser, D. and Lewis, L. E. (2000) “Recall, Liking, and Creativity in TV Commercials: A New Approach“, *Journal of Advertising Research*, 40(3), pp. 7–18. doi: 10.2501/JAR-40-3-7-18.
- Strayhorn, T. L. (2018) *College Students’ Sense of Belonging, College Students’ Sense of Belonging*. doi: 10.4324/9781315297293.
- Sudek, R. (2006) “Angel Investment Criteria“, *Journal of Small Business Strategy*, 17(2), pp. 89–104.
- Surowiecki, J. (2004) *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations*, Doubleday & Co.
- Swayne, N. et al. (2019) “Uncoupling innovation and entrepreneurship to improve undergraduate learning“, *Journal of Small Business and Enterprise Development*. DOI: 10.1108/JSBED-04-2019-0122

-
- Szymanski, D. M., Kroff, M. W. and Troy, L. C. (2007) “Innovativeness and new product success: insights from the cumulative evidence“, *Journal of the Academy of Marketing Science*, 35(1), pp. 35–52. doi: 10.1007/s11747-006-0014-0.
- Taeuscher, K., Bouncken, R. B. and Pesch, R. (2020) “Gaining Legitimacy by Being Different: Optimal Distinctiveness in Crowdfunding Platforms“, *Academy of Management Journal*, p. amj.2018.0620. doi: 10.5465/amj.2018.0620.
- Tausczik, Y. R. and Pennebaker, J. W. (2010) “The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods“, *Journal of Language and Social Psychology*, 29(1), pp. 24–54. doi: 10.1177/0261927X09351676.
- Thies, F., Wessel, M. and Benlian, A. (2016) “Effects of Social Interaction Dynamics on Platforms“, *Journal of Management Information Systems*, 33(3), pp. 843–873. doi: 10.1080/07421222.2016.1243967.
- Tinsley, H. E. A. and Weiss, D. J. (2000) “Interrater reliability and agreement“, in *Handbook of applied multivariate statistics and mathematical modeling*. San Diego, CA, US: Academic Press, pp. 95–124. doi: 10.1016/B978-012691360-6/50005-7.
- Tinto, V. (1993) “Leaving College: Rethinking the Causes and Cures of Student Attrition“, Chicago: University of Chicago Press.
- Tran, T. et al. (2016) “How to Succeed in Crowdfunding: a Long-Term Study in Kickstarter“, (July 2016). Available at: <http://arxiv.org/abs/1607.06839>.
- Treffinger, D. J. (1995) “Creative Problem Solving: Overview and educational implications“, *Educational Psychology Review*, 7(3), pp. 301–312. doi: 10.1007/BF02213375.
- Tsang, T. L. (2019) “A quantitative analysis examining differences between US humanities and STEM students’ propensity toward innovation“, *Journal of Further and Higher Education*, 43(2), pp. 149–165. doi: 10.1080/0309877X.2017.1357069.
- Turner, F. (1894) *The significance of the frontier in American history*. Madison: State of Historical Society of Wisconsin.
- Unks, G. (1979) “The Scholastic Horror Show“, *High School Journal*, 62(4), pp. 157–158. Available at: <https://eric.ed.gov/?id=EJ205820> (Accessed: 28 February 2019).
- Usman, S. M. et al. (2019) “Does the role of media and founder’s past success mitigate the problem of information asymmetry? Evidence from a UK crowdfunding platform“, *Sustainability (Switzerland)*, 11(3). doi: 10.3390/su11030692.
- Vazirani, A. and Bhattacharjee, T. (2021) “Entrepreneurial Finance in the Twenty-first Century, a Review of Factors Influencing Venture Capitalist’s Decision“, *Journal of Entrepreneurship*, 30(2), pp. 306–335. doi: 10.1177/09713557211025654.
- Venkataraman, S. (1997), “The Distinctive Domain of Entrepreneurship Research” in *ADVANCES IN ENTREPRENEURSHIP, FIRM EMERGENCE AND GROWTH*, Vol. 3, pp.119-138, J. Katz, ed., JAI Press, 1997, *FOUNDATIONS OF ENTREPRENEURSHIP*, Scott Shane, ed., Edward Elgar Press, 2002

-
- Verrecchia, R. E. (1983) “Discretionary disclosure“, *Journal of Accounting and Economics*, 5, pp. 179–194. doi: 10.1016/0165-4101(83)90011-3.
- Vismara, S. (2018) “Information Cascades among Investors in Equity Crowdfunding“, *Entrepreneurship Theory and Practice*, 42(3), pp. 467–497. doi: 10.1111/etap.12261.
- Volery, T. et al. (2013) “The impact of entrepreneurship education on human capital at upper-secondary level“, *Journal of Small Business Management*, 51(3), pp. 429–446. doi: 10.1111/jsbm.12020.
- Walter, S. and Lankes, R. D. (2015) “The innovation agenda“, *College and Research Libraries*, 76(7), pp. 854–858. doi: 10.5860/crl.76.7.854.
- Wang, N. et al. (2018) “Understanding the importance of interaction between creators and backers in crowdfunding success“, *Electronic Commerce Research and Applications*, 27, pp. 106–117. doi: 10.1016/j.elerap.2017.12.004.
- Wang, X. and Li, T. (2018) “Problems and Ways of Promoting Innovation and Entrepreneurship Education against the Background of “New Normality“, in *Proceedings of the 2018 International Conference on Sports, Arts, Education and Management Engineering (SAEME 2018)*. Paris, France: Atlantis Press. doi: 10.2991/saeme-18.2018.104.
- Ward, T. B. (2004) “Cognition, creativity, and entrepreneurship“, *Journal of Business Venturing*, 19(2), pp. 173–188. doi: 10.1016/S0883-9026(03)00005-3.
- Warner, A. G., Fairbank, J. F. and Steensma, H. K. (2006) “Managing Uncertainty in a Formal Standards-Based Industry: A Real Options Perspective on Acquisition Timing“, *Journal of Management*, 32(2), pp. 279–298. doi: 10.1177/0149206305280108.
- Warren, A., Kisenwether, E. and Hanke, R. (2006) “A scalable problem-based learning system for entrepreneurship education“, *ASEE Annual Conference and Exposition, Conference Proceedings*.
- Waychal, P. (2016) “A Framework for Developing Innovation Competencies“. doi: 10.18260/p.26321.
- Webb, T., Quince, T. and Watkins, D. (1984) “Small business research. The development of entrepreneurs“, Aldershot, Hampshire.
- Weber, R. (1990) “Basic Content Analysis“. SAGE Publications, Inc. doi: 10.4135/9781412983488.
- Wheat, R. E. et al. (2013) “Raising money for scientific research through crowdfunding“, *Trends in Ecology & Evolution*, 28(2), pp. 71–72. doi: 10.1016/j.tree.2012.11.001.
- White, B. A. and Dumay, J. (2018) “The angel investment decision: insights from Australian business angels“, *Accounting and Finance*. doi: 10.1111/acfi.12427.
- Wieder, B. (2011) Thiel Fellowship Pays 24 Talented Students \$100,000 Not to Attend College. Available at: <https://www.chronicle.com/article/Thiel-Fellowship-Pays-24/127622/> (Accessed: 27 February 2018).

-
- Willis, J. and Todorov, A. (2006) "First impressions: Making up your mind after a 100-ms exposure to a face", *Psychological Science*, 17(7), pp. 592–598. doi: 10.1111/j.1467-9280.2006.01750.x.
- Wilson, F., Kickul, J. and Marlino, D. (2007) "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education", *Entrepreneurship Theory and Practice*, 31(3), pp. 387–406. doi: 10.1111/j.1540-6520.2007.00179.x.
- Wilson, K. E. and Testoni, M. (2014) "Improving the Role of Equity Crowdfunding in Europe's Capital Markets", *SSRN Electronic Journal*, (September). doi: 10.2139/ssrn.2502280.
- Wolf-Wendel, L., Ward, K. and Kinzie, J. (2009) "A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success", *Journal of College Student Development*, 50(4), pp. 407–428.
- World Bank (2013) "Crowdfunding's Potential for the Developing World", *Finance and Private Sector Development Department*, pp. 1–102.
- Xu, L. Z. (2018) "Will a digital camera cure your sick puppy? Modality and category effects in donation-based crowdfunding", *Telematics and Informatics*, 35(7), pp. 1914–1924. doi: 10.1016/j.tele.2018.06.004.
- Yang, J. et al. (2020) "How multimedia shape crowdfunding outcomes: The overshadowing effect of images and videos on text in campaign information", *Journal of Business Research*, 117(August 2019), pp. 6–18. doi: 10.1016/j.jbusres.2020.05.008.
- Yang, Y. et al. (2021) "Why and when paradoxical leader behavior impact employee creativity: Thriving at work and psychological safety", *Current Psychology*, 40(4), pp. 1911–1922. doi: 10.1007/s12144-018-0095-1.
- Yanto, H., Mula, J. M. and Kavanagh, M. H. (2011) "Developing student's accounting competencies using Astin's I-E-O model: An identification of key educational inputs based on Indonesian student perspectives", *RMIT Accounting Educators' Conference*, 2009(March 2017), pp. 1–24.
- Yeh, T.-L., Chen, T.-Y. and Lee, C.-C. (2019) "Investigating the funding success factors affecting reward-based crowdfunding projects", *Innovation*, 21(3), pp. 466–486. doi: 10.1080/14479338.2019.1585191.
- Yin, C., Liu, L. and Mirkovski, K. (2019) "Does more crowd participation bring more value to crowdfunding projects? The perspective of crowd capital", *Internet Research*, 29(5), pp. 1149–1170. doi: 10.1108/INTR-03-2018-0103.
- Yuan, H., Lau, R. Y. K. and Xu, W. (2016) "The determinants of crowdfunding success: A semantic text analytics approach", *Decision Support Systems*, 91, pp. 67–76. doi: 10.1016/j.dss.2016.08.001.
- Zeldin, A. L. and Pajares, F. (2007) "Against the Odds: Self-Efficacy Beliefs of Women in Mathematical, Scientific, and Technological Careers", *American Educational Research Journal*, 37(1), pp. 215–246. doi: 10.3102/00028312037001215.

-
-
- Zhang, H. and Chen, W. (2019) “Crowdfunding technological innovations: Interaction between consumer benefits and rewards“, *Technovation*, 84–85, pp. 11–20. doi: 10.1016/j.technovation.2018.05.001.
- Zhao, H., Hills, G. E. and Seibert, S. E. (2005) “The mediating role of self-efficacy in the development of entrepreneurial intentions“, *Journal of Applied Psychology*, 90(6), pp. 1265–1272. doi: 10.1037/0021-9010.90.6.1265.
- Zhao, H. and Seibert, S. E. (2006) “The big five personality dimensions and entrepreneurial status: A meta-analytical review“, *Journal of Applied Psychology*, 91(2), pp. 259–271. doi: 10.1037/0021-9010.91.2.259.
- Zhou, M. J. et al. (2018) “Project description and crowdfunding success: an exploratory study“, *Information Systems Frontiers*, 20(2), pp. 259–274. doi: 10.1007/s10796-016-9723-1.
- Ziegler, T. et al. (2019) “Shifting Paradigms - the 4th European Alternative Finance Benchmarking Report“, Cambridge. Available at: <https://cdn.crowdfunder.com/wp-content/uploads/2019/04/CCAF-4th-european-alternative-finance-benchmarking-industry-report-shifting-paradigms-April-2019.pdf>.
- Zimmerman, M. A. (2008) “The Influence of Top Management Team Heterogeneity on the Capital Raised through an Initial Public Offering“, *Entrepreneurship Theory and Practice*, 32(3), pp. 391–414. doi: 10.1111/j.1540-6520.2008.00233.x.