Essays on investor communication in the context of startups

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Abstract

With their creativity and innovative business models, entrepreneurs make an important contribution to global innovation, thus promoting economic growth and the labor market with startup jobs. However, the growth ambitions of entrepreneurs also require investments. Against this backdrop, previous research has already extensively discussed the importance of external investors and highlighted different facets of the entrepreneur-investor relationship. Central concept, to explain this relationship, is investor relations, which mainly refers to the communication of entrepreneur and investor.

However, research on investor communication faces the challenge that a variety of new players, hence new forms of financing, have recently emerged in the market, further fragmenting the research field. In addition, technological advances are also changing the way entrepreneurs and investors communicate with each other. Against this background, previous research on investor relations in the startup context leaves open research questions that will be answered in this dissertation. This results in the following overarching research question for the structure of this dissertation: How do entrepreneurs shape communication with their investors?

The first study was co-authored with Andreas Kuckertz and captures the research landscape on entrepreneurial communication using bibliometric analyses with algorithmic historiography and thematic map for science mapping. Thus, the structures of previous communication research from an entrepreneurship perspective are examined in more detail. The basis of this analysis is 383 articles from peer-reviewed journals. The results of these analyses show that communication in the context of resourcing is a relevant field of research, especially in investor relations. Overall, this study thus opens the research field of this dissertation by embedding investor communication as an element of entrepreneurial communication research.

The second study was conducted with Elisabeth S.C. Berger and is a structured literature review that reviews the current state of research on trust between entrepreneurs and different types of investors. It identified and analyzed 32 articles dealing with trust in the context of venture capital, business angels, crowdfunding, or bank financing. This study builds on the results from the first study by revealing that communication is a trust-building factor. Thus, the second study shows how different concepts are interrelated and influence trust in the entrepreneur-investor relationship.

The third study is co-authored with Andreas Kuckertz and examines the communication of entrepreneurs before and during the first wave of the COVID-19 pandemic. It also considers the extent to which entrepreneurs financed by a venture capital investor differ in their communication from those entrepreneurs working without an investor. For this purpose, a novel method of text analysis was used to examine 110,283 tweets from 760 entrepreneurs. The results indicate that working with a venture capital investor also changes the professionalism of founder communication. This group shows a more professional expression of their emotions.

In the fourth study, which was conducted in collaboration with Andreas Kuckertz, the emotions of investors expressed in communication are examined. This study focuses on venture capitalists and business angels. Although these two investors have a longer history in entrepreneurship research, their emotions have so far been largely ignored. However, since emotions are also relevant within relationships and therefore also in communication, this study broadens the view of the big picture in the entrepreneur-investor relationship by adding an emotional perspective. For this study, 994,969 tweets from 822 investors were analyzed and statistically compared regarding their emotions.

Overall, the four studies in this dissertation address different relationship concepts that arise in the context of entrepreneur-investor relationships. Thus, this dissertation also provides impulses for entrepreneurs and investors in practice, for research and also for politics.

Zusammenfassung

Entrepreneure leisten mit ihrer Kreativität und innovativen Geschäftsmodellen einen wichtigen Beitrag zum weltweiten Innovationsgeschehen, fördern damit das Wirtschaftswachstum und schaffen Arbeitsplätze. Die Wachstumsambitionen der Entrepreneure erfordern allerdings auch Investitionen. Vor diesem Hintergrund hat frühere Forschung die Bedeutung von externen Kapitalgebern bereits umfassend diskutiert und unterschiedliche Facetten der Entrepreneur-Investor-Beziehung beleuchtet. Zentrales Konzept, zur Erklärung dieser Beziehung ist Investor Relations, welches sich vor allem auf die Kommunikation von Entrepreneur und Investor bezieht.

Die Forschung zur Investorenkommunikation steht jedoch vor der Herausforderung, dass sich in jüngster Vergangenheit eine Vielzahl an neuen Akteuren, somit neue Finanzierungsformen, auf dem Markt entwickelt haben, die das Forschungsfeld weiter fragmentieren. Darüber hinaus verändert auch der technologische Fortschritt die Art und Weise, wie Entrepreneur und Investoren miteinander kommunizieren. Vor diesem Hintergrund lässt die bisherige Forschung zu Investor Relations im Startup Kontext offene Forschungsfragen zurück, die im Rahmen dieser Dissertation beantwortet werden sollen. Daraus ergibt sich übergeordnet folgende Forschungsfrage für die Struktur dieser Dissertation: Wie gestalten Entrepreneure die Kommunikation mit ihren Investoren?

Die erste Studie wurde gemeinsam mit Andreas Kuckertz verfasst und erfasst durch den Einsatz bibliometrischer Analysen die Forschungslandschaft zu Entrepreneurial Communication mit einem algorithmischen Historiographen und einer thematischen Karte für die Wissenschaftskartierung. Damit werden die Strukturen der bisherigen Kommunikationsforschung aus Entrepreneurship Perspektive näher betrachtet. Die Grundlage dieser Analyse bilden 383 Artikel aus peer-reviewten Journals. Die Ergebnisse dieser Analysen zeigen, dass Kommunikation im Kontext der Ressourcenbeschaffung ein relevantes Forschungsfeld darstellt, insbesondere in Investorenbeziehungen. Diese Studie eröffnet damit das Forschungsfeld dieser Dissertation, indem Investorenkommunikation als Bestandteil der Entrepreneurial Communication Forschung eingebettet wird.

Die zweite Studie entstand mit Elisabeth S.C. Berger und ist ein strukturierter Literaturüberblick, der den aktuellen Forschungsstand zu Vertrauen zwischen Entrepreneuren und verschiedenen Investorentypen aufarbeitet. Dabei wurden 32 Artikel identifiziert und analysiert, die sich mit Vertrauen im Kontext von Venture Capital, Business Angels, Crowdfunding oder Bankfinanzierungen befassen. Diese Studie ist mit den Ergebnissen der

ersten Studie verbunden und zeigt, dass Kommunikation ein vertrauensbildender Faktor ist. Somit zeigt die zweite Studie, wie verschiedene Konzepte miteinander verknüpft sind und das Vertrauen in der Unternehmer-Investor-Beziehung beeinflussen.

Die dritte Studie ist gemeinsam mit Andreas Kuckertz entstanden und untersucht die Kommunikation von Entrepreneuren vor und während der ersten Welle der COVID-19 Pandemie. Dabei wird außerdem berücksichtigt, inwieweit Entrepreneure, die durch einen Venture Capital Investor finanziert wurden, sich in der Kommunikation von denjenigen Entrepreneuren unterscheiden, die ohne Investor arbeiten. Hierfür wurde eine neuartige Methode der Textanalyse eingesetzt, mit deren Hilfe 110 283 Tweets von 760 Entrepreneuren untersucht wurden. Die Ergebnisse deuten darauf hin, dass die Zusammenarbeit mit einem Venture Capital Investor auch die Professionalität der Gründerkommunikation verändert. So zeigt diese Gruppe vor allem ein professionelleres Ausdrücken ihrer Emotionen.

In der vierten Studie, die in Zusammenarbeit mit Andreas Kuckertz entstand, werden in der Kommunikation ausgedrückte Emotionen von Investoren untersucht. Dabei fokussiert sich diese Studie auf Venture Capitalists und Business Angels. Obwohl diese beiden Investoren auf eine längere Historie in der Entrepreneurship Forschung zurückblicken, sind deren Emotionen bislang weitgehend unberücksichtigt geblieben. Da jedoch Emotionen auch innerhalb von Beziehungen und daher auch in Kommunikation relevant sind, erweitert diese Studie den Blick auf das Gesamtbild in der Entrepreneur-Investor-Beziehung durch eine emotionale Perspektive. Für diese Studie wurden 994 969 Tweets von 822 Investoren analysiert und hinsichtlich ihrer Emotionen statistisch miteinander verglichen.

Insgesamt adressieren die vier Studien dieser Doktorarbeit verschiedene Beziehungskonzepte, die im Zusammenhang von Entrepreneur-Investor-Beziehungen auftreten. Damit liefert diese Doktorarbeit auch Impulse für Entrepreneure und Investoren in der Praxis, für die Forschung und ebenso für die Politik.

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1. Introduction

> "Understanding this relationship is an important task for the entrepreneurship community, which is interested in a vital and fruitful collaboration between the two distinct parties that bring venture ideas and venture resources to one table."
>
> Middelhoff et al. (2014, p. 327)

Startups are an important stimulus for economies, contributing to its growth, foster competition, creating new jobs in the labor market, and overall contributing to innovation with their ideas (Block et al., 2017). Until then, entrepreneurs must overcome various challenges along this way to ensure the long-term existence of their startups (George, 2005). The novelty of the organization is often associated with a lack of track record, which in turn leads to a lack of reputation (Amit et al., 1998). Moreover, there is a lack of customers and thus of the corresponding cash flows, and in particular a lack of human and financial resources to support the growth ambitions. Financial resources, especially, are a key driver in this context in order to further develop their innovations, hire employees, build marketing activities and grow in the markets (Block et al., 2018; Huang & Knight, 2017). However, entrepreneur's own money is rarely sufficient and mobilizing outside capital is a challenge for entrepreneurs (Ferrati & Muffatto, 2021). Money from family and friends is limited available (De Clercq et al., 2006) and is typically insufficient for the just mentioned growth ambitions. Furthermore, the great uncertainty with risk as well as a lack of cash flows are reasons that make it difficult for startups to access traditional forms of external capital such as a bank loan (Block et al., 2018; De Clercq et al., 2006; Harrison et al., 2022). Against this background, finding ways and investors for the financing of their new technologies and business models is a strategic task for the entrepreneurs. Therefore, building relationships with financial stakeholders such as investors is an important milestone for entrepreneurs' and their startups (Ferrati & Muffatto, 2021; Hellmann & Puri, 2002).

The successful realization of this strategic task is closely related to communication, since communication is vital for organizations to achieve the set goals (Zerfass et al., 2018). In the entrepreneurship and communication literature, this research path is explored in particular under entrepreneurial or startup communication (Fischer & Reuber, 2014; Godulla & Men, 2022; Wiesenberg et al., 2020), a concept that involves communication of entrepreneurs to stakeholders. In this regard, entrepreneurial communication is a vital concept with implications for resource acquisition questions of entrepreneurs (Martens et al., 2007; Wiesenberg et al., 2020).

Research on entrepreneurial communication has recently gained momentum and developed as burgeoning research stream (Godulla & Men, 2022; Wiesenberg et al., 2020). An important pillar of this stream builds the investor communication, as it includes the communication and relationship concepts against the financial partners, the investors such as venture capitalists (VCs) or business angels (BAs) (Kollmann & Kuckertz, 2006; Shepherd & Zacharakis, 2001).

However, investor communication receives little attention compared to other areas of communication research (Laskin, 2009). And available research on this topic, mainly addresses established companies, which often sell their share via the stock exchange (Dolphin, 2004; Hoffmann et al., 2018), a practice that differs to startups and their investor relations (Moritz et al., 2015). Consequently, the findings of this research have limited applicability because startup financing serves a smaller investor pool compared to the stock market (Kollmann & Kuckertz, 2006).

Against this background, the purpose of this dissertation is to shed light on the investor communication of entrepreneurs' and their startups and provide a better understanding of this complex concept. The aim is to contribute to the research of entrepreneur-investor relationships and in detail to the discussion of entrepreneurial investor communication. In doing so, this dissertation is guided by the following overarching question: How is the entrepreneur-investor communication shaped?

This chapter is structured as follows. In Section 1.1 the conceptual background of investor communication is discussed. The relevance and motivation for this dissertation is presented in Section 1.2. And the overview of the four studies of this dissertation is provided in Section 1.3

1.1 The concept of investor communication: context of this dissertation

The concept of investor communication (sometimes is investor relations or investor relationship marketing used as synonym) is rarely defined in the entrepreneurship literature. Therefore, to create the conceptual background for this dissertation, various explanatory approaches from different disciplines are used to explain investor communication. An overview of this approach is presented in Table 1-1 which show descriptions of previous studies.

In previous studies an often-used description (Laskin, 2009; Strauß, 2018) is from the National Investor Relations Institute (2023) which assigns the concept to strategic management that combine and fulfill multiple tasks such as marketing and communication with a financial background. Furthermore, this description shows that a target group of investor communication is the financial community. The communication function is also highlighted by Hoffmann (2018), who assigns the concept to corporate communication which address also the financial community. Furthermore, both definitions expand the target groups from the financial community up to other groups which are critical for the organization’s success (Hoffmann, 2018; National Investor Relations Institute, 2023). Moritz et al. (2015) build their description on the studies from Dolphin (2004) and Hoffmann and Fieseler (2012) and refer to the sharing of all relevant organizational information’s (financial and non-financial). The aim is to manage relationships with a variety of stakeholders, including investor and other stakeholders (e.g., analysts). This relationship perspective is also used by Tuominen (1997) who use investor relationship marketing as conceptual understanding and address investors with whom organizations maintains relationships. Dolphin (2004) bridges investor communication also with marketing – in the sense of a marketing communication strategy. A further synonym is descripted in the paper of Schulte (2012) and is called entrepreneurial financing management. This mainly refers to the challenge of entrepreneurs in acquiring money and the search process for potential investors.

Across all these descriptions, there are some core findings: Investor communication is the concept that describes financial relationships with investors and includes all relationship stages from building to maintaining (Kollmann & Kuckertz, 2006; Moritz et al., 2015; Tuominen, 1997). In essence and for entrepreneurs, it describes the communication activities between entrepreneurs and their investors, which is why it is also linked to the startup's overall communication strategy (Kollmann & Kuckertz, 2006). In this vein, an understanding emerges that investor communication is influenced by and interacts with other concepts; especially from relationship management (Schulte, 2012; Tuominen, 1997) and communication (Hoffmann, 2018; Moritz et al., 2015).

Furthermore, the investor communication literature is primary focused on the activities of established companies which is also reflected in the definitions. And as mentioned above, this knowledge is limited applicable to the context of startups (Moritz et al. 2015). Because entrepreneurial relationships take place on a personal level, characterized by face-to-face communication. For example, Panda and Dash (2016) findings describe that investors and entrepreneurs’ have a close alignment in the early-stage phase (daily-weekly). The entrepreneur-investor relationship is further influenced by the relationship context, what makes it special. Entrepreneurs’ startups are often not yet established (Huang & Pearce, 2015), their products or services are in early development stages and used technologies are unproven (Murray & Marriott, 1998) - which is why they have yet to build legitimacy and trust with their stakeholders (Nagy et al., 2012; Pollack et al., 2017). However, since the entrepreneur often has more comprehensive information at his disposal, there is information asymmetry and thus a risk of opportunistic behavior (Cable & Shane, 1997). Against this background, the entrepreneur takes on the role of information gatekeeper (Shepherd & Zacharakis, 2001). Furthermore, it is known from principal-agent theory that adverse selection and moral hazard problems are possible in the entrepreneur-investor relationship (Ferrati & Muffatto, 2021; Fried & Hisrich, 1994; van Osnabrugge, 2000). Adverse selection relates primarily to the pre-contractual relationship phase, where the entrepreneur (agent) can also use its information advantage to conceal product or business model weaknesses from the investor (principal), for example. In the case of moral hazard, the entrepreneur (agent) can use these information asymmetries to his own advantage opposite the investors (principal). In sum, overcoming the resulting uncertainty and information asymmetries are then central tasks of communication against investors (Dorfleitner et al., 2018; Ferrati & Muffatto, 2021; Kollmann & Kuckertz, 2006; Moritz et al., 2015; Parhankangas & Ehrlich, 2014). In this vein, investor communication is thus key to the growth ambitions of entrepreneurs’ and their startups and builds a core for shaping relationship.

Table 1-1: Descriptions of investor communication

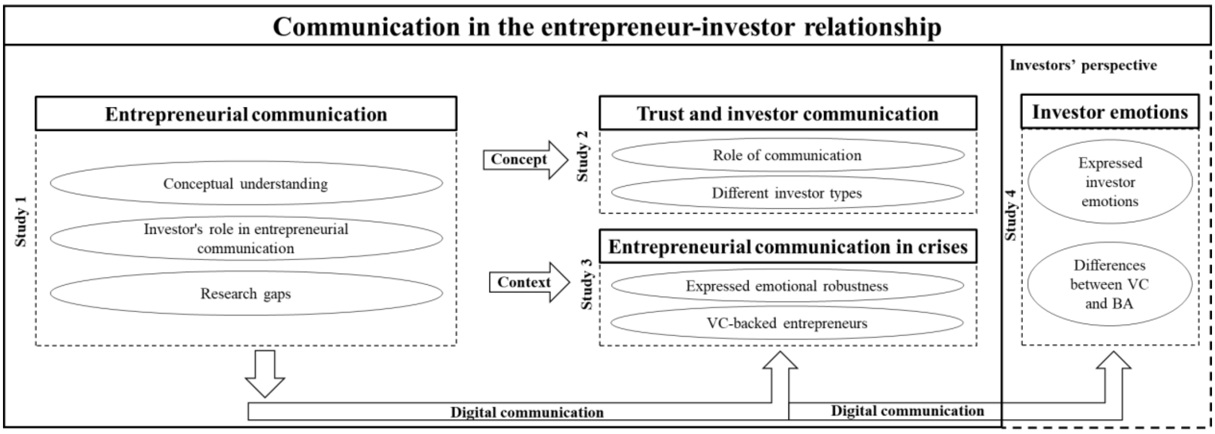
Author(s)	Description of investor communication
Tuominen (1997)	"By investor relationship marketing, we mean the continuous, planned, purposeful, and sustained management activity which identifies, establishes, maintains, and enhances mutually beneficial long-term relationships between the companies and their current and potential investors [...]." (p.47)
Dolphin (2004)	"The purpose of this study is to describe, analyse and understand investor relations as a core element of a co-ordinated marketing communications strategy […]." (p. 27)
Laskin (2009)	"The study claims that investor relations is a practice on the border of finance and communications, and the synergy between these two areas is essential." (p. 210)
Schulte (2012)	"The tasks of the entrepreneurial financing management with regard to the arrangement of market relationships are often understood as rather passive and reactive. The entrepreneur represents his enterprise in this perception in a role as a defensive, searching or even begging asker for funds." (p.475)
Moritz et al. (2015)	"Investor communication, often referred to as investor relations, is understood as the disclosure of financial and non-financial historic, current and future information about a company through different media to establish or maintain relationships with prospective and present investors, analysts and stakeholders (Dolphin, 2004; Hoffmann & Fieseler, 2012)." (p. 309-310)
National Investor Relations Institute (2023)	"Investor relations is a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other constituencies, which ultimately contributes to a company's securities achieving fair valuation." (online)

1.2 Motivation and relevance of investor communication in this dissertation

The findings of the conceptual understanding shows, that investor communication is an integrative concept which relates to other relationship concepts. Therefore, this dissertation aims to deepen the understanding of investor communication as an integrative relationship concept for entrepreneurs. In doing so, this dissertation addresses different concepts and their connection with investor communication: *entrepreneurial communication*, *trust*, and *emotions*. Together, the connection of these three concepts provides a holistic view for entrepreneur-investor relationships and their communication activities, as shown in Figure 1-1.

Overarching all four studies are interconnected in that they look at the entrepreneur-investor relationship from a communication perspective. In doing so, study 1 is the starting point of this dissertation and creates the overarching picture for entrepreneurial communication and its connection with investor communication. This paves the conceptual way for studies 2 and 3 which address identified research gaps from the bibliometric analysis in study 1. As previous research highlights that the entrepreneur and/or the startup is the primary sender of messages, in study 4 we investigate the investor as sender. Therefore, study 4 Study 4 flanks the other studies by also integrating the investor perspective.

Figure 1-1: Overview and connection of the four studies of this dissertation



Previous research indicates that all communication tasks of entrepreneurs are summarized under the term entrepreneurial communication (Fischer & Reuber, 2014; Godulla & Men, 2022; Gossel, 2022; Wiesenberg et al., 2020). Which leads to the circumstance that investor communication is closely related to the entrepreneurial communication research stream. However, until now, this stream so far lacks an overview regarding its structure (Godulla & Men, 2022; Wiesenberg et al., 2020), which makes it difficult to classify investor communication within this research and gain insights in the current knowledge. It is therefore necessary to connect entrepreneurial communication and investor communication conceptually and to identify previous knowledge structures. The first study establishes this foundation by presenting the conceptual structures through the quantitative approach of a bibliometric analysis. Furthermore, study 1 develops the overarching framework for entrepreneurial communication research, define investor's role in this framework and identify open research questions.

First, the results of the bibliometric results show a connection between entrepreneurial communication and other relationship concepts such as trust. In the light of investor communication previous research shows, that information sharing through communication is important to build relationships and trust with investors (e.g., Shepherd & Zacharakis 2001; Sapienza & Korsgaard 1996). However, research of trust between and entrepreneurs is fragmented because of a heterogenous investor landscape. For example, entrepreneurs can raise financial resources via the internet through crowdfunding (Mollick, 2014). In this case, a large group of people (crowd) invests together in a startup, where the contributions of individuals can be small and achieve their impact through mass (Ahlers et al., 2015). Furthermore, traditional investors continue to be part of the ecosystem, such as, VCs (Berger & Köhn, 2020; Gompers & Lerner, 2001) and BAs (Maxwell et al., 2011). Against this background, entrepreneurs' have different investor types with which they communicate and build trust. Therefore, the second study deepens the understanding of communication in trust-building with investors and considers that there are different investors as receiver of entrepreneurial messages. A result of this second study is therefore also a conceptual model of trust research in the entrepreneur-investor relationship and locates communication within it.

Second, study 1 shows that the core of entrepreneurial communication research was performed in contexts without crises or exogenous shocks. Only very few studies exist on the context of an exogenous shock, which mean there is a lack of entrepreneurial crises communication. Therefore, the third study address this gap and investigate entrepreneurial communication considering the COVID-19 pandemic. Here, the context as well as the relationship to investors (VCs) and its effects on entrepreneurial communication are examined. Since investors like VCs are important network partners (Large & Muegge, 2008), this also considers the relevance of networks in the context of a crisis (Brändle et al., 2023; Meurer et al., 2022). In doing so, this study focuses on another concept associated with communication - the expressed emotions (Fernández-Vázquez & Álvarez-Delgado 2020; Scherer 2003). Furthermore, the in study 1 identified transformation process of entrepreneurial communication is also considered. Digitalization, and social media, are changing the way people exchange information and therefore also the way entrepreneurial stakeholders communicate (Chen et al., 2017). Against this background, a stream of research is emerging through recent studies that discusses social media and other digital channels in the context of entrepreneurial finance activities (Aggarwal et al., 2012; Albrecht et al., 2020; Bayar & Kesici, 2020; Block et al., 2022a; Fietkiewicz et al., 2018; Yang & Berger, 2017).

Third, particularly through the analyses from the first two studies, it became clear that often only one relationship side is considered, that of the entrepreneurs. Entrepreneur-investor relationships, however, are characterized by two sides, that of the entrepreneurs and that of the investors (Smith & Bergman, 2020). Therefore, for entrepreneurs to shape relationships with their investors, an understanding of the other side of the coin is also necessary. Since this has been largely ignored so far, study 4 addresses this research gap. Since emotions play a relevant role for both investments and relationships, the focus of study 4 is on investors' emotions. In this vein, this study also addresses the findings from Section 1.2 that communication is related to other concepts. Here, the emotions of two key investors (VC and BA) are examined and compared with each other. Furthermore, and similar to study 3, the fourth study also use the digital communication style as background for the data collection. This considers the circumstance that investors are also active and communicate via social media (Moritz et al. 2015).

1.3 Structure of this dissertation

This dissertation comprises a bibliometric analysis, a structured literature review and two empirical studies that shed light on different concepts of investor relations in startups. In doing so, these papers analyze two fundamental concepts of entrepreneur-investor relationships – trust and communication. Table 1-2 summarizes these four studies.

The first study *Bibliometrically mapping the research field of entrepreneurial communication: Where we stand and where we need to go* is an overview about the current knowledge in entrepreneurial communication research (Kaiser & Kuckertz, 2023a). Over the past few years, research at the intersection of entrepreneurship and communication has grown and developed as entrepreneurial communication (Godulla & Men, 2022; Wiesenberg et al., 2020). To date, however, overviews of this research field have been sparse, calling for a review (Godulla & Men, 2022). A bibliometric analysis in study one (Block & Fisch, 2020; Donthu et al., 2021; Zupic & Čater, 2015) will therefore uncover the structures of previous entrepreneurial communication research and identify research gaps to build a research agenda. With the focus on the overall entrepreneurial communication topic, it shows also how investor communication is embedded in this research stream and it´s role for fields development. The basis of the analysis builds a sample of 383 journal articles written in English. And the analysis of this dataset based on a thematic map for the identification of motor themes and an algorithmic historiography to identify the evolution over time. A key finding of the review shows that communication to acquire necessary resources (e.g., finance, human) is an important cornerstone of previous research. Entrepreneurial communication addresses therefore especially resource providers as receiver. Furthermore, the results indicate a connection with other concepts of entrepreneurial relationships and the study shows a growing interest in digital communication, which is why social media communication is increasingly focused on.

The second study *Trust in the investor-relationship marketing of startups – a systematic literature review and research agenda* examines the current state of research on trust between entrepreneurs and different types of investors (Kaiser & Berger, 2021). Although trust is an important concept for entrepreneur-investor relationships and show links to communication, there is a lack of structure to the related research stream. This is also complicated by the fact that the entrepreneurial finance landscape has become more heterogeneous (Bellavitis et al., 2017; Block et al., 2018; Drover et al., 2017) and trust between entrepreneurs and different investors needs to be explored. Therefore, this study aimed to review the current state of research and reveal pathways for future studies. The analysis of this study based on a structured literature review (Booth et al., 2012; Fisch & Block, 2018; Scheu & Kuckertz, 2023) to identify 32 English-language articles from academic journals. These articles examine trust in the context of four types of investors, including three traditional investors such as VCs, BAs and banks. In addition, this literature review shows that trust between entrepreneurs and investors is also being investigated in more recent forms of financing such as crowdfunding. In the context of the investigated entrepreneur-investor relationships, the focus of previous research is especially on VC relationships. Furthermore, previous studies show that trust has a close relationship with communication, which is why the exchange of information between entrepreneur and investor is an important precursor to building trust. Another key finding shows that the entrepreneur-investor fit, for example through shared values, is also an important means of building trust.

The third study *Emotional robustness in times of crisis: the effects of venture funding on the digital communication styles of entrepreneurs* examines the influence of a crisis, in this case the COVID-19 pandemic, on the communication behavior of entrepreneurs (Kaiser & Kuckertz, 2023b). While there is research on entrepreneurial communication (Godulla & Men, 2022; Wiesenberg et al., 2020) as well as on crises and their consequences for startups (Doern, 2016; Kuckertz & Brändle, 2021), entrepreneurial communication in crises has been largely ignored so far. Therefore, this study aimed to investigate the communication behavior of entrepreneurs in the context of the COVID-19 pandemic. Since professionalism is also associated with the relationship with VCs (Hellmann & Puri, 2002), we examine the extent to which VC-funded entrepreneurs show different communication behavior here than do unfunded ones. In doing so, we use an research method with rising usage in management and entrepreneurship research (Block et al., 2022b; Fisch & Block, 2021; Lee et al., 2017; Obschonka et al., 2017) which based on a large volume of written text and could analyzed through computer. Therefore, this analysis based on a novel dataset with 780 entrepreneurs from the United States and their online communication behavior from the social network Twitter. A longitudinal dataset is used that consists of a total of 110,283 tweets split into pre-pandemic and in-pandemic (first wave of the pandemic). To determine crisis influences on communication, these tweets are checked by text analysis with the software Linguistic Inquiry and Word Count (LIWC). With this analysis, we show that entrepreneurs generally have different communication behavior during the first wave of the COVID-19 pandemic than they did before - especially in the expressed emotions and the analytical content of the communication. In detail, however, we find differences between VC-funded entrepreneurs and those who are not funded at all. The results suggest that entrepreneurs who cooperate closely with a VC and are funded by them control their emotions more professionally.

The fourth study *Emotions in entrepreneurial finance: Analysis of venture capitalists' and business angels' emotions with digital footprints from Twitter* examines differences in the expressed emotions of different investor types. Although investors are a significant target group for entrepreneurs, not all facets of their behavior have been studied to date. While startup investments are, on the one hand, events associated with emotions, emotions are, on the other hand, also part of communication. In addition, communication is important for investor relations, communication is always two-way. Not only do entrepreneurs communicate with their investors, but investors also communicate. Therefore, digital signals, for example via social media, can also be viewed and perceived by entrepreneurs. With this in mind, this study examines how two key investors, VCs and BAs, differ in their expressed emotions. For this our dataset based on 822 VCs and BAs from the United States and their Tweets. With these investors, we generated a tweet sample of 994,969 tweets. Through their professional background as employees in an VC organization (De Clercq et al., 2006) and their partnership with limited partners as capital providers from a VC fund (Kollmann et al., 2014), we expect that VCs differ from BAs in their kind of self-presentation. In detail we expect, that these two investor types show differences in their expressed emotions as part of their online communication. Our analyzes of the investor Tweets show that this hypothesis is confirmed and VCs express a more positive tone in their self-presentation

Table 1-2: Studies in this dissertation

Study	Research question(s)	Relationship concept	Method and sample	Key findings
#1: Bibliometrically mapping the research field of entrepreneurial communication: Where we stand and where we need to go	What are the thematic structures of entrepreneurial communication research and how does the discourse develops over time?	Communication	Bibliometric analysis; 383 research articles	• Resource acquisition of financial capital is an important research stream • Social media communication research is growing
#2: Trust in the investor-relationship marketing of startups – a systematic literature review and research agenda	What is the state of the art of trust in the entrepreneur-investor relationship? What are paths for further research in this research stream?	Trust	Literature review; 32 research articles	• Research focuses especially on trust in Entrepreneur-VC relationships • Communication is a key antecedent to build trust with investors (across different investor types)
#3: Emotional robustness in times of crisis: the effects of venture funding on the digital communication styles of entrepreneurs	How does a crisis change the digital self-presentation of entrepreneurs?	Emotion; Communication (Entrepreneur)	Text analysis; 780 US-based entrepreneurs with 110,283 tweets	• Entrepreneurs adapt their communication within the first wave of COVID-19 pandemic • VC-backed entrepreneurs communicate more professionally as unbacked entrepreneurs
#4: Emotions in entrepreneurial finance: Analysis of venture capitalists' and business angels' emotions with digital footprints from Twitter	How do the expressed emotions of VCs differ from BAs?	Emotion; Communication (Investor)	Text analysis; 822 US-based investors with 994,969 tweets	• VCs communicate more professional and use more positive words • Results indicate that VCs control their emotions better

2. Study 1 - Bibliometrically mapping the research field of entrepreneurial communication: Where we stand and where we need to go

Authors: Manuel Kaiser and Andreas Kuckertz[1]

Abstract

Entrepreneurial communication is vital for acquiring resources and building stakeholder relations in startups. This research stream has grown rapidly in recent years and has developed as a multidisciplinary field at the interface of communication and entrepreneurship. However, this rapid development and the plethora of associated perspectives have led to a diverse and fragmented research field with different foci and concepts, making structural overviews difficult. Against this background, we conducted a bibliometric analysis to uncover the hidden structure of previous entrepreneurial communication research and to guide scholars toward a future research agenda. First, we identified 383 articles via the Scopus database, published in 245 academic sources, that covered nearly 50 years of research. We then connected the results of previous research using co-occurrence analysis and a thematic map to highlight the intellectual structure of the field and offer insights into its research clusters. Our algorithmic historiographic analysis illustrates the development of the field over time and highlights upcoming topics. Overall, entrepreneurial communication is crucial, particularly for startups engaging in resource acquisition for employee and investor relations with venture capitalists and business angels.

Keywords: bibliometric analysis, entrepreneurial communication, historiogaph, start-up, thematic map

[1] Status and reference: This study is published in Management Review Quarterly: Kaiser, M., Kuckertz, A., Bibliometrically mapping the research field of entrepreneurial communication: where we stand and where we need to go. Management Review Quarterly (2023), in press. https://doi.org/10.1007/s11301-023-00355-3.

2.1 Introduction

Communication is vital for entrepreneurs to overcome weaknesses and build relationships with their stakeholders and major resource providers (Fischer & Reuber, 2014). Recently, research has seen an increasing number of studies addressing the communication activities of startups and entrepreneurs under the umbrella of entrepreneurial communication or startup communication (Fischer & Reuber, 2014; Godulla & Men, 2022; Gossel, 2022; Wiesenberg et al., 2020). Broadly, we may equate entrepreneurial communication with all communication emanating from startups, but focusing on more group-oriented subcategories, such as investor relations (Kollmann & Kuckertz, 2006; Moritz et al., 2015), public relations (Chen et al., 2021), or employee relations and leadership communication (Men et al., 2018; Men et al., 2021a) makes entrepreneurial communication activities more concrete. We know from these previous studies that entrepreneurs must undertake multiple communication tasks to support their stakeholder relationships. Furthermore, since entrepreneurs rely heavily on these relationships (Pollack et al., 2017), from a strategic perspective, communication can play an essential role in ensuring an organization's survival (Zerfass et al. 2018).

As new actors on the market, entrepreneurs must signal that they are part of it, and in doing so, they must communicate to their different stakeholders their startups' existence (Singh & Aust, 2022). Furthermore, to grow and survive, entrepreneurs need different resources from these stakeholders (Huang & Knight, 2017). Moreover, this lack of resources is also countered by entrepreneurial communication as it is essential for resource acquisition (Martens et al., 2007; Wiesenberg et al., 2020); it helps to create legitimacy (Nagy et al., 2012) and is part of trust building (Kaiser & Berger, 2021) with these stakeholders to create the exchange of resources. In this vein, previous research describes entrepreneurs' role as communication agents (Men et al., 2021a).

However, in today's volatile business environment, there is also a need for change and new requirements for entrepreneurial communication. On the one hand, the digital transformation, with its many different social media channels, is radically changing how entrepreneurs communicate (Olanrewaju et al., 2020), from a former personal level to online and sometimes anonymous mass communication. Moreover, this digital communication transformation process was accelerated by the COVID-19 pandemic (Statista, 2020), which limited face-to-face communication (Ratten, 2020). Thus, new opportunities associated with technological progress are influencing entrepreneurial communication, as external events (e.g., crises) are changing established behaviors. On the other hand, another transformation process—sustainability transformation (Hinderer et al. 2021; Hockerts & Wüstenhagen, 2010; Johnson & Schaltegger, 2020)—is underway, also shaping entrepreneurial communication. Furthermore, globalization is compounding these developments by connecting people in different cultural contexts, which is why entrepreneurial communication must consider cultural aspects (Godulla & Men, 2022). Because of these developments, research and practice on entrepreneurial communication must deal with considerable complexity.

In an overview, Wiesenberg et al. (2020) provided the first assessment of the research status quo concerning entrepreneurial communication and identified six dimensions: *resource acquisition*, *internal communication*, *external communication*, *branding*, *entrepreneurs' communication*, and *strategic communication*. These different dimensions, each garnering many publications, produced a diverse field of research that is extremely complex and heterogeneous. In general, such a situation makes it difficult for researchers to take an overview, is challenging for further research development, and can hinder the expansion of knowledge (Kraus et al., 2021). Furthermore, entrepreneurial communication research is conducted at the intersection of communication research (Men et al., 2021a) and entrepreneurship research (Fischer & Reuber, 2014), further complicating the situation. Consequently, in a recent editorial for a special issue on startup communication, Godulla and Men (2022) described the research stream in this field as scattered and called for a systematic unifying perspective.

Against this background, we conducted a bibliometric analysis to provide an overview of the current state of knowledge and the structure of entrepreneurial communication research (Block & Fisch, 2020; Donthu et al., 2021; Zupic & Čater, 2015). Hence, this study answers the research question regarding the thematic structures of entrepreneurial communication in published research and how the discourse has developed over time. Furthermore, the results allow us to propose how research on entrepreneurial communication could and should develop and which topics will be relevant for future research.

We examined a dataset of 383 articles by 849 authors, associated with 22,086 references, taken from the Scopus database to answer the research question. Such an extensive dataset does not lend itself to a structured literature review but makes bibliometric analysis preferable (Zupic & Čater, 2015). Furthermore, given the broad scope of entrepreneurial communication research, bibliometric methods are potentially helpful in structuring the research field (Donthu et al., 2021).

A key finding of our thematic mapping was that previous research has focused on communication in the context of resource acquisition—employee relations for human resources and investor relations for financial resources. In particular, communication with investors is a vast field of research that has drawn significant attention, as indicated by the most influential articles in terms of citations.

With this paper, we make two contributions based on bibliometric analysis (Block & Fisch, 2020; Donthu et al., 2021). First, as necessary in emerging and evolving fields (Moritz & Block, 2022), we contribute to structuring the research on entrepreneurial communication, showing its thematic evolution. Due to the scattered research landscape, a reliable overview is missing so far (Godulla & Men, 2022; Wiesenberg et al., 2020). Primarily through the interplay of two disciplines—communication and entrepreneurship—we contribute by revealing their content structures and identifying trends. Since Wiesenberg et al. (2020) have already highlighted initial research areas in their literature review, we extended their approach by further elaborating on the underlying structures of the entrepreneurial communication research field by using bibliometric analyses. Furthermore, our findings are summarized in an integrative framework. Thus, we are meeting the demand for further systematic perspectives in this field of research (Godulla & Men, 2022; Wiesenberg et al., 2020). Second, building on our results, we suggest future research areas for entrepreneurial communication and propose a research agenda grounded in existing research.

We have structured the remainder of this paper as follows. In Section 2.2, we describe the methods and analytical techniques. The results concerning the descriptive structure of the research field follow in Section 2.3. The thematic analysis based on science mapping is then presented in Section 2.4. Building on these analyses and findings, we develop an integrative framework and suggest a research agenda for future entrepreneurial communication research in Section 2.5, give practical implications in Section 2.6, show the limitations in Section 2.7 and conclude the paper in Section 2.8.

2.2 Methods

2.2.1 Data collection

We used the Scopus database to identify relevant academic articles with an entrepreneurial communication focus which researchers employ widely for bibliometric analysis in entrepreneurship research (Anand et al., 2021; Dolhey, 2019; Pellegrini et al., 2020). Previous research highlighted the enormous scope of the database (Anand et al., 2021) and the quality of the covered journals (Dolhey, 2019). Scopus is a citation database that comprises over 84 million records, of which more than 26 million relate to peer-reviewed journals (Scopus, 2022).

Accordingly, this database is suitable for helping emerging research fields gain the broadest possible insight (Pellegrini et al. 2020); in our case into entrepreneurial communication developments (Godulla & Men, 2022).

In selecting the keywords, we considered the diversity of entrepreneurial communication to obtain a comprehensive picture of this research stream. Thus, we considered entrepreneurial or startup communication (Godulla & Men, 2022; Wiesenberg et al., 2020), impression management and self-presentation (Collewaert et al., 2021; Parhankangas & Ehrlich, 2014), pitch presentations (Balachandra et al., 2021; Clingingsmith et al., 2023), investor relations (Moritz et al., 2015), public relations (Chen et al., 2021), storytelling (Chapple et al., 2021), rhetoric (Allison et al., 2013), and narrative (Martens et al., 2007; Williams et al., 2016). The following search terms emerged from these considerations: (entrepreneur* OR startup* OR "start-up*" OR "new venture*" OR "small firm*" OR founder OR SME OR "small enterpris*" OR "small enterpriz*") AND ("impression management" OR communicat* OR pitch* OR "self-presentation" OR "self-presentation" OR storytelling OR rhetoric* OR narrativ* OR "public relations" OR PR OR "investor relations").

Overall, the first part of the search string covered different variations of *entrepreneurial*, and the second part covered the central concepts of *communication*, enabling us to search for entrepreneurial communication articles. This strategy also covered most of the keywords relating to Wiesenberg et al. (2020), extended in the communication part of the search string with more detailed keywords (e.g., impression management, pitch, and storytelling). However, our keywords differed from those of Wiesenberg et al. (2020) because we did not use marketing or branding keywords. Indeed, Wiesenberg et al. (2020) pointed out that their findings on startups' strategic communication covered two core areas: *entrepreneurial marketing* and *entrepreneurial communication*. Because our bibliometric analysis emphasized entrepreneurial communication, we focused on communication keywords. Nevertheless, we also identified entrepreneurial marketing articles but only those directly related to communication and thus part of *marketing communication* (Park & Loo, 2022; Wallnöfer & Hacklin, 2013).

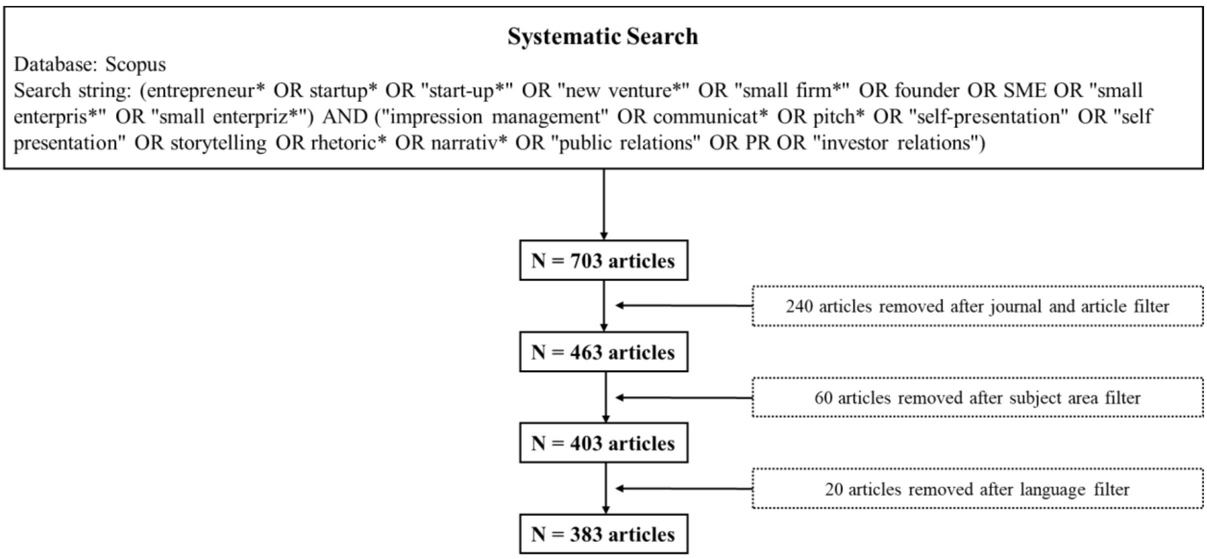
Following previous bibliometric analyses, we used this search string to search the titles for relevant articles (Deyanova et al. 2022; Kalantari et al. 2017; Kraus et al. 2014) up to October 5, 2022.[2] In line with these studies, the title search helped identify articles closely

[2] We are aware that it is common in some bibliometric analyses to include only complete years in the analysis. Thus, if the search query takes place in the middle of the year, as in our study, the search year is often excluded for further analysis. However, since this research stream is still developing, we did not want to exclude any

connected to our topic (Deyanova et al., 2022). Thus, we identified articles that addressed our research focus, and this procedure allowed us to access a larger dataset for entrepreneurial communication. The first search of Scopus returned 703 articles, but additional filters, which were used as exclusion criteria, reduced this finally to 383 articles.

On the one hand, we included only journal articles for further analysis (Anand et al., 2021; Block et al., 2020). On the other hand, we limited the analysis to the Scopus categories *Business, Management and Accounting, Economics, Econometrics and Finance,* and *Social Sciences*. This approach enabled us to cover entrepreneurial communication articles in communication journals (Men et al., 2018; Men et al., 2021a) and entrepreneurship or management journals (Davis et al. 2017; Martens et al. 2007) if they fell into different subject categories. For example, the *International Journal of Strategic Communication* is listed in Scopus under *Social Sciences* but has recently published articles on entrepreneurial communication (Godulla & Men, 2022; Gossel, 2022). Furthermore, we only included articles in the English language (Block et al., 2020; Deyanova et al., 2022). This procedure resulted in a final sample of 383 articles with 22,086 references. Figure 2-1 summarizes the data collection process.

Figure 2-1: Article identification process



relevant articles by using an artificial cut-off. In particular, in a first initial screening, we discovered that an important special issue on entrepreneurial communication was published in spring 2022, which would be excluded with a year cut-off. We therefore followed the study by Block et al. (2020), who conducted a bibliometric analysis including March 2019.

2.2.2 Bibliometric analysis

For various reasons, this study relied on bibliometric analysis to uncover the structure of previous entrepreneurial communication research (Block & Fisch 2020; Donthu et al. 2021; Zupic & Čater 2015). First, bibliometrics are helpful for broad areas of research (Block & Fisch, 2020; Donthu et al., 2021), which was the case with the present study covering 383 articles. In addition, this research area contains various subcategories of communication (e.g., employee relations, investor relations, and public relations). Second, although earlier researchers worked only with print journals, there has been a rapid increase in digital publications, posing the challenge of managing large volumes of publications (Kraus et al., 2021). Therefore, bibliometric analysis methods allow for analyzing massive amounts of data without cognitive limitations (Pellegrini et al., 2020). Such an analytical approach can reveal research structures based on quantitative methods (Zupic & Čater, 2015). Third, the main objective of our study was to summarize entrepreneurial communication research, identify its overarching structure (Block & Fisch, 2020), and explore emerging patterns (Donthu et al., 2021).

Because various techniques are available for bibliometric analyses (Donthu et al. 2021), we briefly explain the techniques we employed to achieve our research goal. In detail, we used the Bibliometrix R package with the Biblioshiny application for the central part of our analysis (Aria & Cuccurullo, 2017)—valuable tools used for previous bibliometric analysis (Forliano et al., 2021; Singh & Walia, 2022). We also used CitNetExplorer (another relevant tool for conducting bibliometric analysis) to complement this approach (van Eck & Waltman, 2014).

To gain an initial overview of the themes in entrepreneurial communication research, we used a *co-occurrence* analysis and employed relevant keywords. Co-occurrence (sometimes co-word) analysis provides an overview of the structure of a research field by analyzing the relationships between words (Zupic & Čater, 2015).

For the visual preparation of co-occurrences and detailed analysis, we used a *thematic map* (Cobo et al., 2011) to cluster the research themes into four fields to assess their initial relevance (Aria & Cuccurullo, 2017; Aria et al., 2022). To illustrate the evolution of entrepreneurial communication research over time, in addition to purely descriptive analysis, we also prepared a *historiograph* (Garfield, 2004). Historiography shows how prominent individual articles are related to others across a timeline. These two analyses formed the core of our study of entrepreneurial communication research. We supplemented the content analysis with further descriptive analyses by examining our research field's developments over time and essential journals in the field. In summary, we incorporated both performance analysis and science mapping into our study. Table 2-1 summarizes our main techniques with short descriptions and the key tools utilized.

Table 2-1: Bibliometric analysis techniques

Main Analysis	**Description**	**Key Tool for Data Analysis**
Descriptive analysis		
Publications per year	Analysis of publications over time and development of the research field based on the number of publications	Bibliometrix
Top contributing journals	Analysis of the most influential journals based on the number of publications and publications per journal over time, with their journal rankings	Bibliometrix
Top contributing articles	Analysis of the 10 most influential articles (based on citations) and their contributions to the research field	Bibliometrix
Science mapping		
Thematic mapping	Analysis of the thematic clusters based on the keywords and their co-occurrences	Bibliometrix
Historiographic mapping	Analysis of the most influential articles based on a citation network and presentation over time	CitNetExplorer

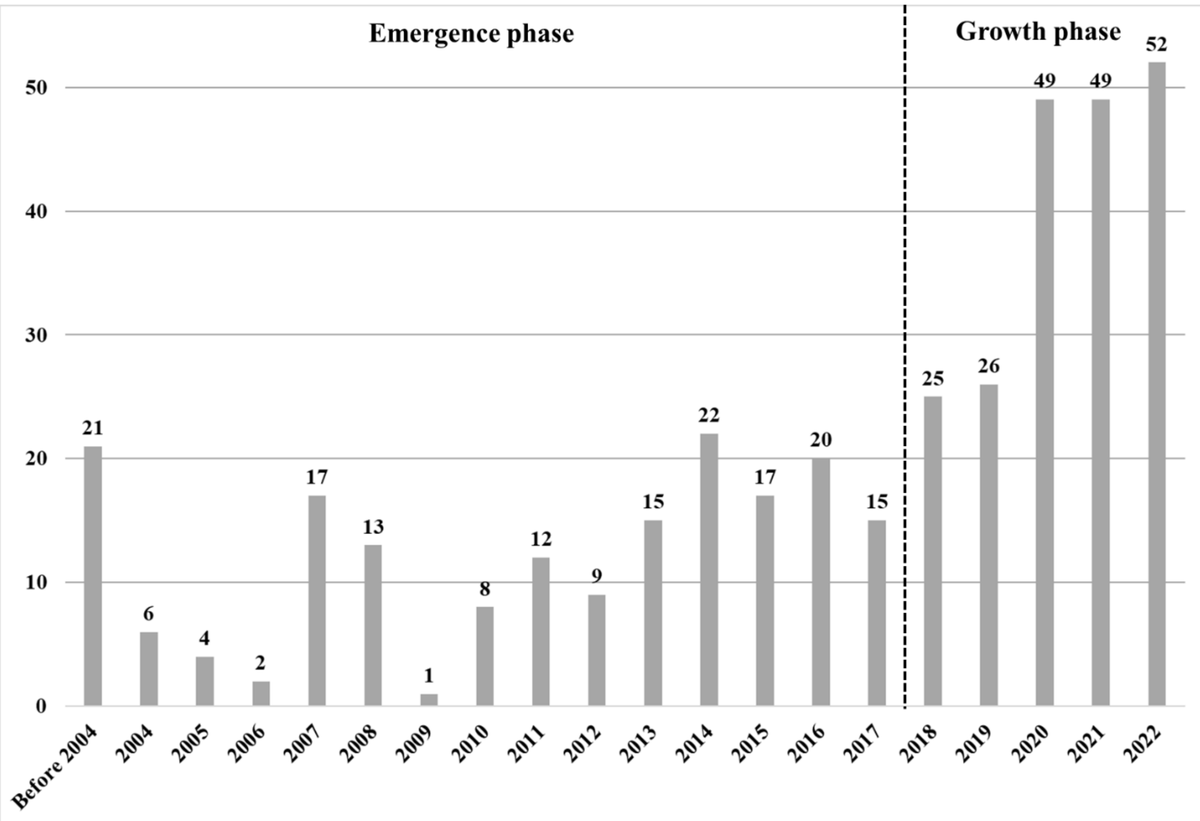
2.3 Descriptive Map of the Field

2.3.1 Evolution of entrepreneurial communication as a research field

The first article identified in this analysis was published in 1973, so this bibliometric analysis covers the period 1973–2022 (up to October 5, 2022). However, all articles before 2003 were bundled together for a better overview. Before this period, research on entrepreneurial communication was relatively sparse and produced only a few articles per year (i.e., 21 articles were published from 1973 to 2003). The most productive year for publications was 2022, with 52 articles identified during the data collection in October, followed by 2020 and 2021, each with 49 articles. Overall, the results showed that 201 of the 383 articles were published between 2018 and 2022, meaning that 52% of the sample fell into this period. Research on entrepreneurial communication gained momentum during this period and developed from an emergent phase to a growth phase.

The first nine months of 2022 included more than twice as many publications as the first period (1973–2003). There may be many reasons for this. First, 2020–2022 was a particularly productive period, during which the COVID-19 pandemic struck, and researchers might have used the lockdowns to write articles (n = 49 in 2021 and 2020; n = 52 in 2022). In our case, this meant more research on entrepreneurial communication. Second, the data revealed that "new" communication researchers have recently become increasingly involved in entrepreneurial communication studies and have influenced the number of publications. This situation suggests that other disciplines have boosted entrepreneurial communication. Figure 2 shows the development of entrepreneurial communication research based on published articles per year, naming the different developmental phases.

Figure 2-2: Articles per year in Scopus



2.3.2 Important journals for entrepreneurial communication research

The 383 articles in this sample were published in 245 journals. The most productive journal was the *Journal of Business Venturing*, with 16 articles, followed by the *International Journal* *of Strategic Communication*, with 12 articles. This constellation further highlighted that entrepreneurial communication lies at the intersection of communication and entrepreneurship since the two most productive journals each covered one of these academic disciplines. The *Journal of Business Venturing* was the most influential in terms of total citations (TCs), with 1,421 citations for 16 articles to date. However, the *International Journal of Strategic Communication* was the journal with the second least citations (TCs: 8) among our top 15 rankings due to the recency of the articles (11 of the 12 articles in this journal were not published until 2022). In the following places were *Entrepreneurship: Theory and Practice*, with eight articles, and *Sustainability*, with eight articles. Regarding citations, the *Academy of Management Journal* occupied second place (TCs: 817) with four overall articles, followed by *Entrepreneurship: Theory and Practice* in third place (TCs: 542).

Table 2-2 lists the top 15 journals according to the number of publications, supplemented by further information, such as the journal ranking according to different rating scores. The table includes 15 journals publishing at least four articles. Overall, the fragmented structure of the research field was reflected in the distribution of the 383 articles across the journals. The 15 most productive journals published 95 of the 383 articles, corresponding to nearly 25%, whereas 230 journals published only 1–3 articles.

Furthermore, we used two established rating scores to evaluate journal quality: the SCImago Journal Rank (SJR) and the Association of Business Schools Ranking (ABS). The journal with the highest SJR (10.874) and ABS values (4*) in this sample was the *Academy of Management Journal*, with 4 articles out of the overall 383 articles. Other top-rated journals included the *Journal of Business Venturing* (SJR, 5.829; ABS, 4), *Entrepreneurship: Theory and Practice* (SJR, 3.353; ABS, 4), *Journal of Business Research* (SJR, 2.316; ABS, 3), and *Technological Forecasting and Social Change* (SJR, 2.336; ABS, 3). This result indicated that the journals with the highest (SJR and/or ABS) rankings mainly originated in the management or entrepreneurship literature but that entrepreneurial communication research from a communication perspective is growing.

Table 2-2: Top contributing journals in Scopus

Rank	Journal	No of Articles	Before 2004	2004 - 2008	2009-2013	2014-2018	2019-2022	Total citations	SJR	ABS
1	Journal of Business Venturing	16	-	2	4	4	6	1,421	5.829	4
2	International Journal of Strategic Communication	12	-	-	-	1	11	8	1.389	-
3	Entrepreneurship Theory and Practice	8	-	-	2	4	2	542	3.353	4
4	Sustainability Switzerland	8	-	-	-	2	6	93	0.664	-
5	IEEE Transactions on Professional Communication	6	-	-	-	5	1	74	0.445	-
6	Journal of Business Research	6	1	1	-	-	4	340	2.316	3
7	International Journal of Entrepreneurship and Small Business	5	-	3	-	1	1	23	0.287	2
8	International Small Business Journal	5	-	1	4	-	-	513	1.819	3
9	Journal of Business and Technical Communication	5	-	-	1	2	2	49	0.911	-
10	Academy of Entrepreneurship Journal	4	-	-	-	1	3	7	-	-
11	Academy of Management Journal	4	1	1	-	-	2	817	10.874	4*
12	International Journal of Entrepreneurial Behaviour and Research	4	-	-	1	1	2	43	1.206	3
13	Journal of International Entrepreneurship	4	-	1	-	1	2	76	1.004	1
14	Small Enterprise Research	4	-	2	-	-	2	11	-	1
15	Technological Forecasting and Social Change	4	-	-	-	1	3	49	2.336	3
	∑	**95**	**2**	**11**	**12**	**23**	**47**	**4,066**	**-**	**-**

2.3.3 Important articles in entrepreneurial communication research

Although older articles often included a higher number of citations, this overview is heterogeneous, so the articles with the most frequent Scopus citations were published in the period 1996–2017. The article with the most frequent citations (TC: 466) was published by Martens et al. (2007). In their paper, the authors discussed the use of narratives, especially storytelling, in the context of resource acquisitions and showed how they influenced decision-making processes. In second place for the most frequent citations (TC: 275) was Sapienza and Korsgaard (1996), with their study on communication through feedback in the entrepreneur–investor relationship showing that feedback supports the positive shaping of investor relations. Third-ranked for citations (TC: 265) was Davis et al. (2017), with a further article on communication to acquire financial resources. In the context of entrepreneurial crowdfunding activities, the authors examined communication in online pitches and showed that communication product creativity could positively influence the acquisition process. The following article in this ranking (TC: 232) was the Introduction to the special issue *Entrepreneurial Narrative: Greif Symposium on Emerging Organizations*, written by Gartner (2007). This article provided an initial overview of the use of narratives for entrepreneurship research. Next was Rae (2005), with an article on entrepreneurial learning (TC: 205). This article referred to communication in a broad sense, analyzing the life stories of startup founders. The results of this study build a triadic model of entrepreneurial learning, meaning that entrepreneurial communication was a central part of the research design. Garud et al. (2014b) and their article on entrepreneurial storytelling followed in sixth place (TC: 204), examining projective storytelling to take a closer look at its effects on generating legitimacy. In their theoretical paper, the authors highlighted various possibilities and pointed to challenges in implementation. In seventh place (TC: 199) was Garud et al. (2014a), who examined how entrepreneurs use narratives in their communication to contextualize their innovations. The next (TC: 169) was Padilla and Pagano (1997), with their research on communication in the financial context of banks. Another article on communication for resource acquisition, by Allison et al. (2013) and ranked ninth (TC: 166), was devoted to rhetoric, examining how it affects microlending and showing that the communication context influences decision speed. The results suggested that communicated innovativeness is associated with greater investor risk and can influence the investment pace. Finally, the oldest paper in this ranking was Gassenheimer et al. (1996), ranked tenth (TC: 160). This article dealt with communication in the context of entrepreneurial cooperation, especially in the context of franchise systems. As a key result, the authors showed that communication can influence satisfaction in cooperative relationships.

Based on this initial analysis of the leading articles (according to citations) within entrepreneurial communication research, we noted that communication with resource providers, particularly investors, has been a leading research stream. Investor communication is, therefore, a defining area of previous entrepreneurial communication research. It is also interesting that the authors of previous research approached this communication from different directions, such as *narrative*, *rhetoric,* or even *storytelling*. Moreover, the *Journal of Business Venturing* was again in the lead for the number of articles and its influence on the ranking. Thus, these results showed that 3 of the 10 seminal papers were published therein. Table 2-3 provides an overview of the top 10 articles sorted by Scopus citations.

Table 2-3: Top 10 contributing articles per citation in Scopus

Rank	Reference	Title and Journal	Total citations	Key results
1	Martens et al. (2007)	Do the stories they tell get them the money they need? The role of entrepreneurial narratives in resource acquisition. *Academy of Management Journal*	466	Narratives in entrepreneurs' communication supports acquisition of external financial capital
2	Sapienza and Korsgaard (1996)	Procedural justice in entrepreneur-investor relations. *Academy of Management Journal*	275	Communication through feedback supports the positive shaping of entrepreneur-investor relationships
3	Davis et al. (2017)	Funders' positive affective reactions to entrepreneurs' crowdfunding pitches: The influence of perceived product creativity and entrepreneurial passion. *Journal of Business Venturing.*	265	Showing creativity in an online pitch of crowdfunding campaigns influence the funding performance
4	Gartner (2007)	Entrepreneurial Narrative and a Science of the Imagination. *Journal of Business Venturing*	232	n/a (Editorial to an special issue)
5	Rae (2005)	Entrepreneurial Learning: a Narrative-Based Conceptual Model. *Journal of Small Business and Enterprise Development*	205	Narrative as research method to build an conceptual model of entrepreneurial learning
6	Garud et al. (2014b)	Entrepreneurial Storytelling, Future Expectations, and the Paradox of Legitimacy. *Organizational Science*	204	Gaining legitimacy is linked to the recipient's expectations (cognitive and pragmatic)
7	Garud et al. (2014a)	Contextualizing Entrepreneurial Innovation: a Narrative Perspective. *Research Policy*	199	Narratives are a method used by entrepreneurs to market their innovations
8	Padilla and Pagano (1997)	Endogenous Communication Among Lenders and Entrepreneurial Incentives. *Review of Financial Studies*	169	When banks share information about their customers, it can reduce and increase the bank's profit
9	Allison et al. (2013)	The Effect of Entrepreneurial Rhetoric on Microlending Investment: an Examination of the Warm-Glow Effect. *Journal of Business Venturing*	166	The type of narratives influences the speed of funding
10	Gassenheimer et al., (1996)	Cooperative arrangements among entrepreneurs: An analysis of opportunism and communication in franchise structures. International *Journal of Business Research*	160	Satisfaction and performance are closely linked to communication

2.4 Science Mapping

2.4.1 Conceptual structure with thematic mapping

To show the conceptual structure of entrepreneurial communication research, we built a thematic map using Bibliometrix (Aria & Cuccurullo, 2017; Aria et al., 2022). Based on the co-occurrence of the authors' keywords, we identified the first thematic clusters within the research area (Block et al., 2020).[3] The thematic map then helped us concretize the identified networks and, in particular, compare them in a matrix to obtain a detailed analysis of the co-occurrences (Aria et al., 2022). This procedure made it possible to evaluate research topics in four clusters: *niche*, *motor*, *emerging/declining*, and *basic* (Cobo et al., 2011). These four clusters are now briefly described based on explanations provided by previous studies (Aria et al. 2022; Cobo et al. 2011; Forliano et al. 2021).

Niche themes are specialized topics with minor relevance to the research area but have connections to other low-relevance topics. In contrast, some topics were highly important to the research field and well developed—the *motor themes*. The basic themes were less developed but equally important. Finally, emerging or declining topics lack development and are likewise of relatively marginal importance, so we summarized them under *emerging/declining themes*. These four clusters fell along two axes: the X-axis, which described the relevance of a topic (relevance degree), and the Y-axis, which indicated the stage of development (development degree).

Motor themes: We included three directly assignable clusters in our thematic map. The largest cluster in our sample was highly developed and the most relevant, represented by the terms communication, the abbreviation for small-medium sized enterprises (SMEs), and innovation. Another cluster included entrepreneurial learning, resilience, and entrepreneurial storytelling. The third motor theme bundled impression management, business angels, and communication skills. Two other clusters were identified during the transition to basic themes. One cluster included startup, social media, and leadership; the other represented entrepreneurship education, entrepreneurialism, and higher education.

Basic themes: We identified four clusters of basic themes. The first cluster, with the highest relevance but the least development, included entrepreneurship, narrative, and crowdfunding. Content analysis, narrative analysis, and entrepreneurial narrative constituted a further (second) cluster with a lower degree of development. The remaining themes fell into

[3] Figure 2-6 in the Appendix shows the traditional co-occurrence network for our sample as an extension of this analysis.

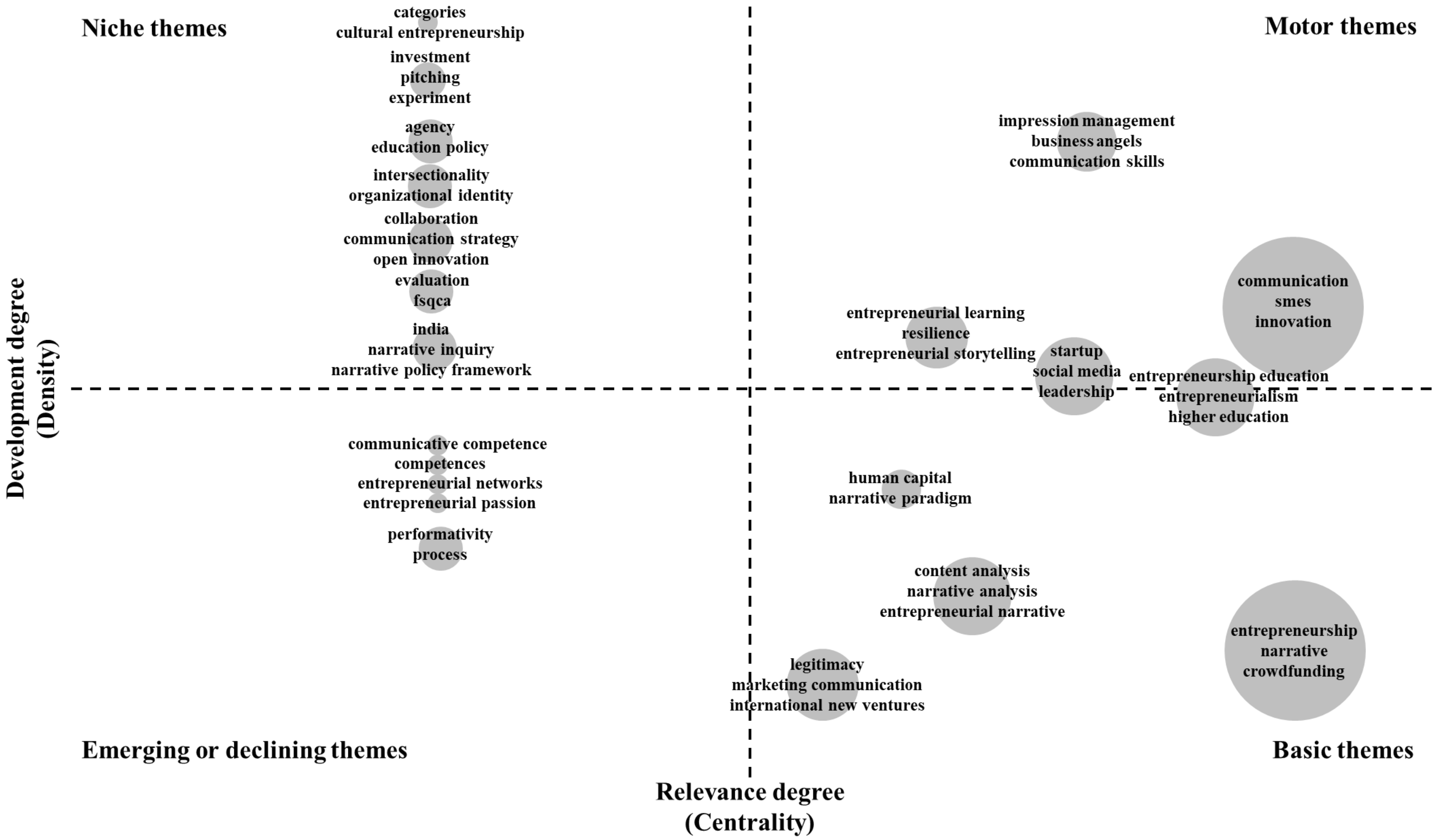
the third cluster, including legitimacy, marketing communication, and international new ventures, and the final cluster (Cluster 4), related to the keywords human capital and narrative paradigm.

Emerging/Declining themes: We bundled the topics in this map into five direct clusters with approximately similar values for relevance and degree of development. Four of these clusters had in common that they contained only one keyword: Cluster 1 referred to communicative competence, and Cluster 2 to competences. Cluster 3 referred to entrepreneurial networks, Cluster 4 to entrepreneurial passion, and Cluster 5 to performativity and process.

Niche themes: Overall, we identified seven small clusters in this quadrant. Similar to the emerging/declining themes, we found three clusters with similar values for their relevance and development degree. Cluster 1 included the keywords categories and cultural entrepreneurship and was the cluster with the highest degree of development but a low value for relevance. Next was Cluster 2, including investment, pitching, and experiment, followed by Cluster 3, including agency and education policy, and Cluster 4, including intersectionality and organizational identity. Cluster 5 included collaboration, communication strategy, and open innovation; Cluster 6 included evaluation and the abbreviation for fuzzy-set qualitative comparative analysis (fscqa); and Cluster 7 included India, narrative inquiry, and narrative policy framework.

To ensure the readability of the figure, we restricted the clusters to a maximum of three words. In addition, we adjusted the circles in *Emerging/declining themes* and *Niche themes* to make the clusters more readable since, initially, these clusters lay directly on top of each other in their quadrants and were not readable. Based on the summarizing table and the visualized clusters in the thematic map, we noticed that impression management and business angels emerged as important motor themes for entrepreneurial communication in the upper right quadrant of the matrix. Overall, the relevance of stakeholder communication was evident in different clusters. Figure 2-3 shows the four quadrants with their thematic foci.

Figure 2-3: Thematic map of entrepreneurial communication research



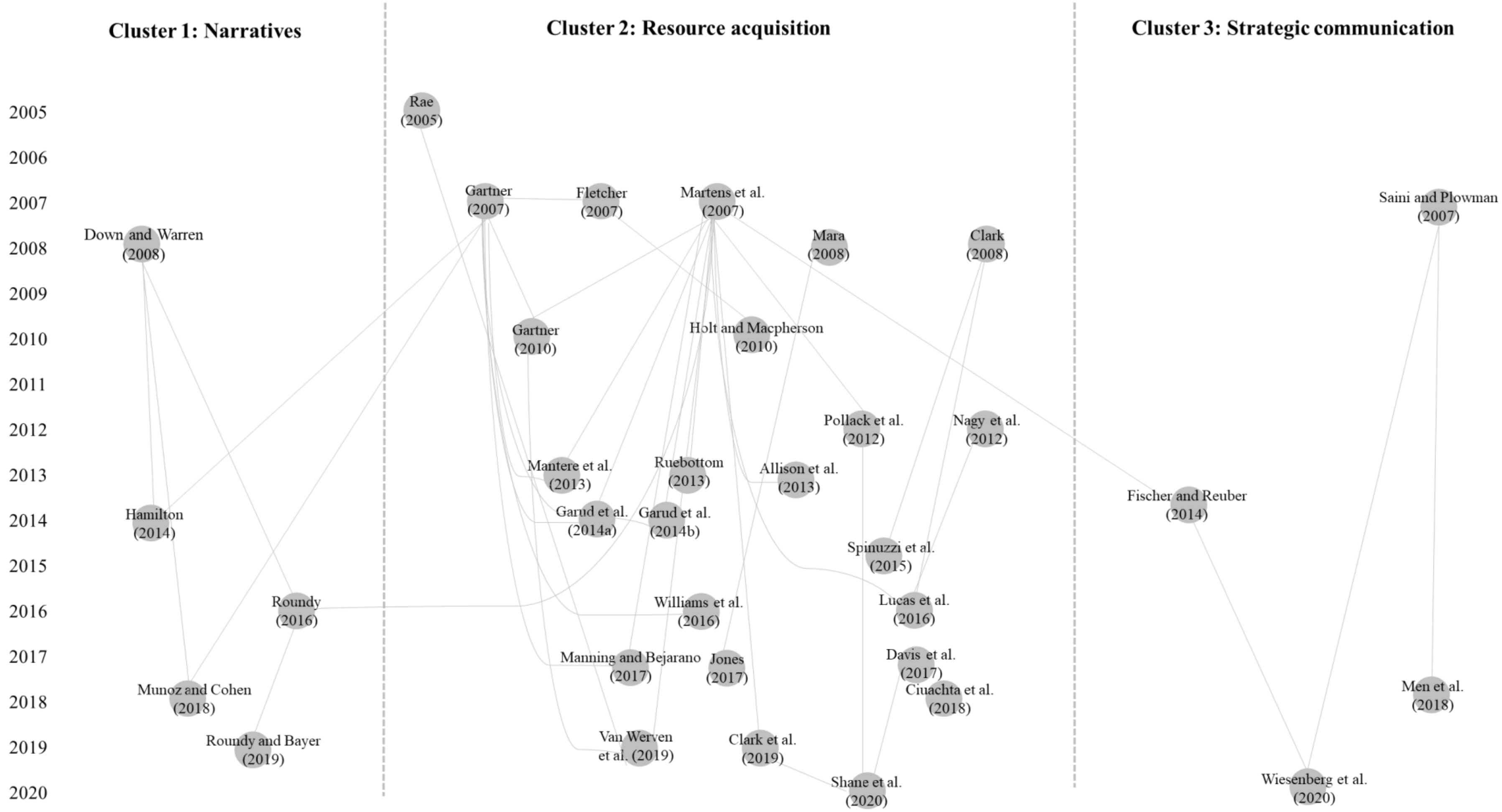
2.4.2 Intellectual structure with historiographic mapping

Having already gained an initial insight into the development of the research field through the descriptive analysis (Section 2.3.1), we now sought to deepen the analysis. To understand the development of entrepreneurial communication research and its intellectual structure in a temporal context, we used a historiograph. This approach made it possible to understand core papers in their temporal contexts and their relationships to each other. Historiographs provide insights into the citation network of a research field and how documents are connected (Garfield, 2004; van Eck & Waltman, 2014). The result of such an analysis is a timeline that shows the years of publication for core publications and uses lines to visualize the citation relationships between documents. This approach provides an overview of how individual studies have contributed to developing a research field over time (Garfield, 2004) and helps uncover influential studies in a chosen research field (Budler et al., 2021). We developed an algorithm-based historiograph using CitNetExplorer, following van Eck and Waltman (2014). Since this tool is primarily used for Web of Science datasets, we used the R package Scopus2CitNet (RStudio, 2023) to prepare data for entry into CitNetExplorer and facilitate processing the Scopus dataset. We then analyzed and visualized our dataset using CitNetExplorer, using a minimum of 10 citations.

As mentioned above, historiographic mapping is an algorithmic analysis of a research stream and presents its core documents as a citation network (Garfield, 2004). It is, therefore, a method to aggregate the topics of a research field (Kuckertz & Block, 2021). In this vein, the algorithm analyzes the connection between articles through their citations, identifies core documents, and shows how topic clusters evolve (Vogel et al., 2021). The historiography results are visualized in a map showing the chronological development of the research field over time. In doing so, the Y-axis represents the timeline with the years the main articles are published (Budler et al., 2021). While traditional citation analysis primarily identifies clusters, the historiographic map extends this with the connection of the publication year and presents a timeline. Overall, this algorithmic-driven form of analysis and visualization of core documents and networks is emerging in the management and entrepreneurship literature. For example, Budler et al. (2021) use this approach to give an overview of the business model research and its underlying network, Bretas and Alon (2021) apply it in the context of franchise research, Ghura et al. (2022) provide a picture for corporate entrepreneurship and Alnajem et al. (2021) use historiographic mapping for the circular economy research stream.

Although our dataset covered nearly 50 years of publication, the intellectual structures of the field were still nascent. Figure 2-2 has already shown that, from 2004 onwards, there was continuous progress in the development of entrepreneurial communication research. This result was also reflected in our historiograph since coherent structures were clearly visible from 2004. From 1973–2005, the studies showed few interrelationships, so we focused on 2005 onward in this analysis. The results of our historiographic mapping are illustrated in Figure 2-4 and show three core clusters overall.

Figure 2-4: Historiograph of entrepreneurial communication research



Cluster 1, on the left side of the figure, focuses on narrative as a component of entrepreneurial communication for founders and other stakeholders (Down & Warren, 2008; Hamilton, 2014; Harmeling, 2011; Muñoz & Cohen, 2018; Roundy, 2016; Roundy & Bayer, 2019). In detail, this research cluster examined identity-building narratives (Down & Warren, 2008) in entrepreneurial ecosystems (Roundy, 2016; Roundy & Bayer, 2019) or sustainable startups (Muñoz & Cohen, 2018). Furthermore, this cluster also focused on the communication used by stakeholders when talking about failed startups (Mantere et al., 2013). Roundy's (2016) and Gartner's (2007) studies built a bridge between the narrative cluster and the second cluster, initialized by Martens et al. (2007).

Cluster 2, in the middle of the figure, primarily considered communication dedicated to acquiring resources and built on the foundation of earlier work by Martens et al. (2007), which formed the indirect or direct cornerstone of this cluster (Allison et al., 2013; Lucas et al., 2016; Manning et al., 2020; Manning & Bejarano, 2017; Pollack et al., 2012; Shane et al., 2020; van Werven et al., 2019). In this regard, communication was often considered in the context of an investor pitch to examine the communication skills of entrepreneurs (Clark, 2008), their rhetoric strategies (Holt & Macpherson, 2010; van Werven et al., 2019), the communication of passion (Davis et al., 2017; Lucas et al., 2016; Shane et al., 2020), specific behavioral factors (e.g., preparedness; (Pollack et al., 2012)), product creativity (Davis et al., 2017), usage of storytelling (Manning et al., 2020), pitch deck design (Spinuzzi et al., 2015), or figurative language (Clarke et al., 2019). Furthermore, marketing communication (Mara, 2008), entrepreneurial coachability (Ciuchta et al., 2018), cultural empowerment (Jones, 2017), and impression management (Nagy et al., 2012) are part of this cluster. We also noted that this cluster included entrepreneurial learning (Rae, 2005) as well as considering the narratives used in communication to convey entrepreneurial stories (Fletcher, 2007) and entrepreneurial intentions (Gartner, 2010).

Cluster 3, on the right of the figure, was also initiated by Martens et al. (2007) but connected to Fischer and Reuber (2014) and their study of online entrepreneurial communication. It also built a bridge between entrepreneurial and strategic communications. Although the core of previous research considered entrepreneurship and associated communication, the Wiesenberg et al. (2020) paper opened this up from a strategic communication perspective. Saini and Plowman (2007) initiated another trend in this cluster with their study on internal communication, which forged a link between strategic communication (Wiesenberg et al., 2020) and further studies on entrepreneurial leadership communication (Men et al., 2018).

This historiographic mapping showed that a key focus was entrepreneurial communication and its connection to resource acquisition, especially in investor relationships. Furthermore, this cluster was linked to the developing research stream of internal communication with startup employees and the overarching conceptualization of entrepreneurial strategic communication. Moreover, the results showed that entrepreneurial communication research was strongly related to the study of narratives used by entrepreneurs and to describe entrepreneurs (e.g., stakeholders from the entrepreneurial ecosystem). This also expanded the understanding of entrepreneurial communication, including communication about entrepreneurs and entrepreneurship.

In summary, this analysis reflects the results of the previous analysis. First, entrepreneurial communication is a young field whose structures are just emerging. Second, communication with stakeholders is a central focus of the research, especially in generating resources for startups.

2.5 Discussion and Agenda for Future Entrepreneurial Communication Research

2.5.1 Discussion of the main findings

Our study used descriptive and bibliometric analyses with science mapping to structure previous entrepreneurial communication research. The descriptive results highlighted that entrepreneurial communication is on the upswing, with a growing number of publications. Although the term entrepreneurial communication suggests that both entrepreneurship and communication research are integrated, the latter has only recently been introduced, as the results for the top contributing journals showed. For example, a significant increase in 2022 was associated with the *International Journal of Strategic Communication*. We also observed a strong influence of researchers with a communication focus among the essential authors according to the number of articles.

Moreover, this view was further reinforced by the historiograph, which also showed a communication perspective increase, especially after 2020 (Men et al., 2021a; Wiesenberg et al., 2020). Accordingly, entrepreneurial communication has increasingly developed into a cross-disciplinary topic similar to that seen, for example, in entrepreneurial marketing research (Hills et al., 2008; Most et al., 2018). This has resulted in theoretical concepts from both disciplines being integrated into and developing this research stream.

Although various dimensions of entrepreneurial communication have already been studied, the conceptual understanding is still ambiguous (Gossel 2022). Against this background, we suggest the following definition that summarizes our findings and explains the conceptual roots of entrepreneurial communication.

Definition: Entrepreneurial communication involves all information-sharing efforts by entrepreneurs with key stakeholder groups such as investors, employees, customers, and the larger public to help successfully establish and grow the startup.

This definition includes essential areas of previous conceptual understanding (see Gossel 2022 for a recent conceptual review). First, many organizational tasks are directly handled by entrepreneurs in the early stages of their startups and concern the means they use to communicate with different stakeholders and address different topics and information needs in light of their target audiences; for example, their presentations to investors in the context of startup pitches (Clark 2008), the hiring and management of startup employees (Men et al. 2021a), or internal startup communications (Wolf et al., 2022). Hence, our definition includes investor relations and investor communication (Moritz et al. 2015), employee relations and leadership communication (Men et al. 2021b), and public relations for communicating with the community (Chen et al. 2021). Second, building on this with a focus on entrepreneurs, our definition addresses the associated skills, as communication is considered a vital entrepreneurial skill (Gossel, 2022; Hill & Levenhagen, 1995; Martin, 2009). Third, from an overarching point of view, entrepreneurial communication includes a strategic perspective (Godulla & Men, 2022; Rudeloff et al., 2022; Wiesenberg et al., 2020). Thus, overall, communication contributes to the survival of an organization and ensures its continued existence (Zerfass et al., 2018), meaning that, according to our definition, entrepreneurial communication plays a vital role in keeping startups running and growing. In summary, entrepreneurial communication is the overarching term used to describe how entrepreneurs communicate with different audiences in different contexts to ensure the operation of their startups. Nevertheless, the term entrepreneurial communication could also be defined in a broader sense, as our results revealed that it generally refers to communication in a startup ecosystem and, thus, to both the communication used by entrepreneurs themselves and the communication that takes place via entrepreneurs (i.e., the stories and narratives that are created by and used to describe entrepreneurs).

The themes identified in our descriptive analyses and the findings from our science mapping showed that entrepreneurial communication had produced several core research streams. First, entrepreneurial communication related to resource acquisition to obtain both financial (Parhankangas & Ehrlich, 2014) and human resources (Men et al., 2021a) was a motor theme for the development of the field. In this context, it proved vital for establishing and maintaining relationships with stakeholders, with a particular focus on acquisition. These findings are consistent with the literature review conducted by Wiesenberg et al. (2020), who also identified this cluster. Second, another cluster dealt primarily with online communication, especially through social media channels (Chen et al., 2021; Fischer & Reuber, 2014). This cluster label differed from previous results in that Wiesenberg et al. (2020) clustered such communication together with external communication. Third, the influence of communication researchers and journals has made strategic communication the main focus of recent research (Gossel, 2022; Rudeloff et al., 2022; Wiesenberg et al., 2020). Again, we observed links to Wiesenberg et al.'s (2020) study, but this path has become much more comprehensive through further new studies. Fourth, on a conceptual level, we found that entrepreneurial communication is driven by narratives (Gartner, 2007; Mantere et al., 2013; Roundy & Bayer, 2019), which have been examined to explore the communication between entrepreneurs and their stakeholders. In this context, we also noted that entrepreneurial communication did not exclusively refer to the communication of founders; in a broader sense, it also included narratives by and about entrepreneurs.

2.5.2 Developing an integrative framework of entrepreneurial communication

Based on the findings of this bibliometric analysis, we developed an integrative framework in Figure 2-5 to summarize the structure of entrepreneurial communication research, create an overarching picture of the current knowledge and show our understanding. The structure of this framework is described below.

In synthesizing the findings, we build our framework on the classic sender-receiver model (sometimes known as Shannon-Weaver-Model; see also Shannon (1948)). At its core, this model provides the information source on the one side: the message's sender. Furthermore, on the other side of this model, the submitted message arrives at the receiver.

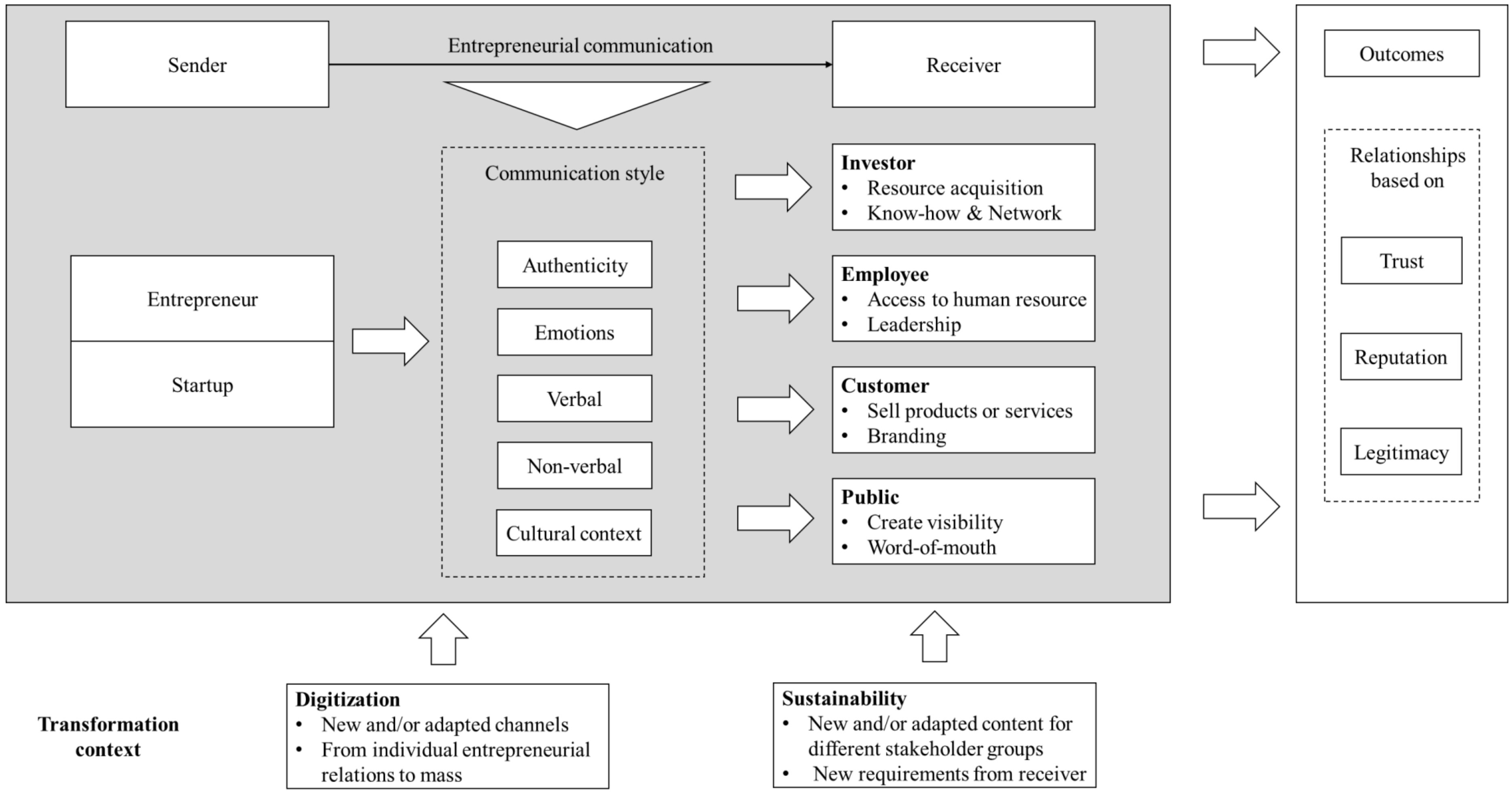
The left side of our model shows the sender, the entrepreneur and/or the startup in entrepreneurial communication. Previous studies show that communication is examined chiefly from the perspective of entrepreneurs (Balachandra et al., 2021; Clark, 2008; Clingingsmith et al., 2023; Men et al., 2021a). Furthermore, the startup as an organization is also a sender of messages (Chen et al., 2021; Fischer & Reuber, 2014). In addition, we have found that factors affect the preparation of information as communication style. On the one hand, these include authenticity (Men, 2021) and emotion (Fernández-Vázquez & Álvarez-Delgado, 2020). Authenticity appeals to openness and transparency and is essential for startup employees, for example, to create trusting relationships (Men et al., 2018). Furthermore, the sender's expressed emotions are vital to the receiver (Scherer, 2003). In the investor pitch, for example, they support entrepreneurs' arguments and show a positive reaction from the receiver (Fernández-Vázquez & Álvarez-Delgado, 2020).

On the other hand, previous studies show that entrepreneurial communication occurs verbally through spoken words (van Werven et al., 2019) and additionally through non-verbal signals (Clarke et al., 2019). Moreover, previous studies show that entrepreneurial communication occurs in different cultural settings (e.g., China, Morocco, and Germany). The sender's messages about his style then reach the receiver in the entrepreneurial communication framework. As mentioned in the previous sections, the investors (Kollmann & Kuckertz, 2006) and employees (Men et al., 2021a) are two vital target groups and receivers of the messages. With investor communication, entrepreneurs address their need for financial resources (Martens et al., 2007) supplemented by investors' non-financial capital. Employee communication is also relevant for resources, in this case, for human resources (Wiesenberg et al., 2020). Moreover, as entrepreneurs act as leaders, leadership communication is another part of entrepreneurial communication (Men et al., 2021b). Furthermore, previous research shows that entrepreneurial marketing communication is used to address customers as another group of receivers (Wiesenberg et al., 2020) and to build the startup brand (Chaudhri et al., 2022). The fourth receiver is the general public for public relations activities (Chen et al., 2021; Gray et al., 2004) to show presence against this audience and influence their word-of-mouth through dialog communication (Chen et al., 2021).

Current developments in digitization and sustainability have highlighted transformation-driven communication as an external context of entrepreneurial communication that influences the sender-receiver relationship. Digital transformation has provided new ways of sharing information online and thus supports entrepreneurs' digital communication with their stakeholders (Fischer & Reuber 2014; Meurer et al. 2022), which leads to the emergence of new channels through which to communicate. In the context of sustainability, a complementary stream of research is developing that considers how startups take this into account (Constantin & Kavoura, 2022; Simon & Ettl, 2019). In this process, the content of communication changes.

The communication of sender and receiver leads especially to stakeholder relationships. Previous publications note entrepreneurs' need to build trust (Welter, 2012), reputation (Rode & Vallaster, 2005) as well as legitimacy with their stakeholders (Nagy et al., 2012). Entrepreneurial communication addresses these challenges as our framework shows on the right side with the outcomes and leads to relationships based on these vital concepts; trust (Kaiser & Berger, 2021; Lakeman et al., 2021), reputation (Abeysekera, 2019) and legitimacy (Huang-Horowitz & Evans, 2020; Nagy et al., 2012). Enabling these relationships leads to the initial argument that entrepreneurial communication plays a central role in any startup's survival (see Zerfass et al., 2018 for the relevance of communication for organizations).

Figure 2-5: Framework of entrepreneurial communication research



2.5.3 Development of a future research agenda

The results of our study showed that the research stream of entrepreneurial communication is still in its growth stage, and many unanswered questions remain (Godulla & Men, 2022; Wiesenberg et al., 2020). Consequently, our analyses highlight research paths that have not yet been taken (Block & Fisch, 2020), and the study can serve to formulate a future research agenda and stimulate future entrepreneurial communication research. Our recommendations are based on the framework shown in Figure 2-5 to elucidate how the identified structures can be used to develop the field further.

2.5.3.1 Theoretical development of the field

Across the 383 identified studies, the focus of entrepreneurial communication research was on entrepreneurs' communication, expanded to include the communication of other actors in the overall entrepreneurial ecosystem. Therefore, previous research has focused on how entrepreneurs communicate and employ various sub concepts of communication. This opens up the question of the extent to which entrepreneurial communication is related exclusively to the entrepreneurial ecosystem. In our discussion, we have already indicated that structures resembling those of entrepreneurial marketing research are developing. Research on entrepreneurial marketing has discussed their conceptual roots in the context of entrepreneurs (Gruber, 2003) and in a broader context as an innovative concept that can be used independently of entrepreneurship (e.g., for established organizations) (Morris & Paul, 1987). In this vein, Kraus et al. (2010, p. 2) referred to entrepreneurial marketing as "marketing activities with an entrepreneurial mindset" (p. 2). This view could also apply to entrepreneurial communication, and although this research stream has examined communication in established organizations, it has primarily considered innovative cases demonstrating an entrepreneurial mindset. Against this backdrop, Gossel (2022) pointed out that a view focused solely on startups may not be sufficient. We found that a broad conceptual understanding of entrepreneurial communication also captured stakeholders' communication about entrepreneurs using entrepreneurial stories. In addition, future research should clarify the conceptual relationships and differences between entrepreneurial marketing and communication. Thus far, we do not understand well how these two concepts are linked or where researchers see differences and similarities.

Based on recent developments in this research stream, there are indications that the influence of communication research is increasing. This means, for future research, that further concepts from communication can be integrated, leading to the following research paths:

a) A better understanding of the role of the entrepreneurial mindset in the communication of established organizations.
b) Clarification of the relationship between entrepreneurial communication and entrepreneurial marketing.
c) A deeper understanding of the communication discipline and its influence on entrepreneurial communication.

2.5.3.2 Investor communication

Previous research has shown that, as a critical task, entrepreneurs use communication to build investor relationships (Wiesenberg et al., 2020). However, research on investor communication has focused mainly on the pre-investment phase of the relationship and analyzed communication in pitch presentations—an initial task necessary to convince investors of their support (van Werven et al., 2019). This is surprising, as we know from the literature on startup financing that entrepreneur–investor relationships have different phases (Maxwell et al., 2011; Tyebjee & Bruno, 1984). Against this background, it is therefore essential for research to include the post-investment phase of investor communication. By analyzing post-investment communication, studies on this phase would help entrepreneurs to take a holistic view of investor communication.

Furthermore, the research on individual actors is very scattered: communication with venture capitalists (Kollmann & Kuckertz, 2006), with business angels (Parhankangas & Ehrlich, 2014), or online with crowdfunding investors (Moritz et al., 2015). Furthermore, general stakeholders are also involved, which is why there are opportunities for further investigation of investor communication (Fischer & Reuber, 2014). The few studies that dealt explicitly with investor communication were distributed across a small number of investor types, but this research could be extended by the fact that investor types are in a state of flux, and the investigation of previously unexplored investors could enrich the field (Bellavitis et al., 2017) Forms of financing could include accelerators (Crișan et al., 2021), family offices (Zellweger & Kammerlander, 2015), or initial coin offerings (Fisch, 2019). Entrepreneurs must also communicate with investors regarding these financing forms, so there are opportunities for practice and research to investigate this heterogeneity in investor communication. Future studies could include individual investors, the structures of startups' general investor communication strategies, and how different types of investors influence them.

Our study observed an increasing trend in online entrepreneurial communication through social media, implying that these channels also play a relevant role in communication (Fischer & Reuber, 2014; Olanrewaju et al., 2020). In the context of investor communications, however, this area has so far been underexplored, so we know less about using social media for this purpose. This raises the question of what role social media play in investor communications for startups and what requirements individual investors (e.g., venture capitalists, business angels, family offices, accelerators, and initial coin-offering investors) have of them. Overall, these considerations offer the following research paths for future entrepreneurial communication research in the context of investors:

a) Clarification of communication structures in the post-investment phase of entrepreneur–investor relationships.
b) Expansion of entrepreneurial investor communication to newer forms of financing (e.g., accelerators, family offices, or initial coin offerings).
c) Inclusion of the digital context of social media channels in analyses of entrepreneurial communication in investor relations.

2.5.3.3 Employee and leadership communication

We have also mentioned other target groups besides investors. While future research on entrepreneurial investor communication could continue to focus on external stakeholders, entrepreneurs also need to provide internal stakeholders with information and address them in their communication (Wiesenberg et al., 2020). In this context, Godulla and Men (2022) mentioned entrepreneurial leadership communication as a relevant field of research. One possibility is for future studies to consider the aftermath of the COVID-19 pandemic (see for example Kuckertz & Brändle, 2021). This pandemic has led to uncertainty among employees in organizations, especially since March 2020 (the pandemic declaration), regarding what will happen in the future. It has also changed the leadership context from personal leadership to digital leadership. Although we mentioned an increase in publications after 2020 (the pandemic outbreak) in Section 3.1, we identified no stronger content link to crisis research. Therefore, entrepreneurial crisis management focusing on communication is not very visible in previous research and is still largely unexplored (Kaiser & Kuckertz, 2023a), which is relevant not only for the COVID-19 context but for crisis contexts in general. Similar to investors, this raises the question of how social media is integrated into employee communication. Furthermore, communication is closely linked with other concepts, such as trust, which opens up further opportunities for future research to investigate how entrepreneurial leadership communication needs to be designed to foster employee trust. These research paths could include the following considerations of entrepreneurial leadership communication:

a) A better understanding of crises (e.g., the COVID-19 pandemic, natural disasters, or financial crises) and "black swan" events to explore their influences on entrepreneurial communication.
b) Clarification of the role of social media channels in entrepreneurial communication with employees.
c) A better understanding of other relationship concepts (e.g., trust) and their connections to entrepreneurial communication.

2.5.3.4 Technological impact on entrepreneurial communication

Communication is influenced by the context and environment in which it occurs. This analysis illustrated that technological change is changing communication, whether for online communication via social media (Fischer & Reuber, 2014; Pakura et al., 2020) or online financing via crowdfunding (Moritz et al., 2015), to give two examples. However, according to current developments, this seems to be only the beginning because other technologies are starting to influence communication. Thus, in line with Godulla and Men (2022), new technologies are opening up new research streams. One example is artificial intelligence (AI), which involves machine learning and neural networks. On the one hand, early AI-based models make it possible for texts to be written by this technology (Short & Short 2023). Also, researchers have recently shown that technology can generate images from text (Saharia et al., 2022), thus transforming visual communication. On the other hand, AI is changing the possibilities for analyzing communication by, for example, enabling texts to be analyzed for their content (Antretter et al., 2019). However, thus far, entrepreneurial communication research has discovered little about the use of AI from the perspective of entrepreneurs and stakeholders, such as investors (Short & Short, 2023). Therefore, the question of the AI status quo in entrepreneurial communication strategies arises. Furthermore, few studies have been conducted on how much stakeholders (e.g., investors) use this technology for communication analysis. In summary, based on these considerations, the following research paths can be explored:

a) Exploration of the possible applications of AI in the context of entrepreneurial communication.

b) A better understanding of AI and its influence on entrepreneurial communication strategies.
c) Consideration of the perspectives of entrepreneurs' stakeholders (e.g., investors or employees) and their possible usage of AI relative to entrepreneurs' communication.

2.5.3.5 Entrepreneurial communication in the context of sustainability

Although digital transformation is often a central field of research (see our analyses and future research agenda), sustainability transformation is also a critical field of action. A research stream on sustainable entrepreneurship has developed (Berger & Blanka, 2023; Hinderer & Kuckertz, 2022; Ruebottom, 2013) that considers, for example, social innovations, sustainable business models, or impact investing. Thus far, the extent to which these developments affect entrepreneurial communication research has been largely unexplored. This is surprising, as there are interesting and relevant research questions that could advance the field. For example, previous studies have shown that stakeholders pay attention to sustainability (Lortie et al., 2022). In entrepreneurial finance, a separate area of impact investing has been developed that encourages these investors to make sustainable investments (Block et al., 2021a). This leads to the question of the extent to which these financial stakeholders also place different demands on entrepreneurial communication inseparably from the context of communication content. However, this question applies equally to employees. These potential research questions could also be explored with entrepreneurs regarding sustainable startups. Previous studies have shown that different groups of people communicate differently (Obschonka et al., 2017). So far, little is known about the extent to which entrepreneurs with sustainable startups exhibit different characteristics when communicating. Building on these considerations, we derived the following research opportunities:

a) A better understanding of stakeholders' sustainable requirements for entrepreneurial communication.
b) Exploration of sustainable entrepreneurial communication and how this differs from traditional approaches to entrepreneurial communication.
c) Understanding the communication of sustainable entrepreneurs and how it differs from entrepreneurs using other business models.

2.6 Practical implications

Beyond the development of a future research agenda, our study's findings also provide implications for practice. First, entrepreneurial communication is identified as an essential tool for building relationships. Therefore, entrepreneurs should know that communication is necessary and connected with other vital concepts such as trust and legitimacy. Communication should therefore be used purposefully for visibility and to gain the trust of others, reputation, and achieve legitimacy of their business models. In this vein, our model gives an overview of essential factors of the communication style. Even though time is often a critical factor in startups and many tasks depend on the entrepreneurs, communication should be prioritized to build relationships. Second, our results show that different target groups are addressed with entrepreneurial communication. Entrepreneurs should remember this in their communication and be clear about whom they are addressing (e.g., customer, employee, investor) and what the target group expects. In this vein, entrepreneurs should create communication plans and concepts for each audience to address them in the right place and with the right message – target-group-specific communication. Third, communication is a skill and task often connected with the entrepreneur and their role as a startup leader. However, not every entrepreneur has the same skill set, so permanent learning plays a vital role in entrepreneurial communication. Our study shows that new requirements of society and economies (e.g., sustainability, digitization) influence communication, so communication skills must be permanently examined and developed further if necessary (e.g., with upskilling). In practice, entrepreneurial communication must, therefore, constantly adapt to changes and consider these requirements (e.g., content, medium).

2.7 Limitations

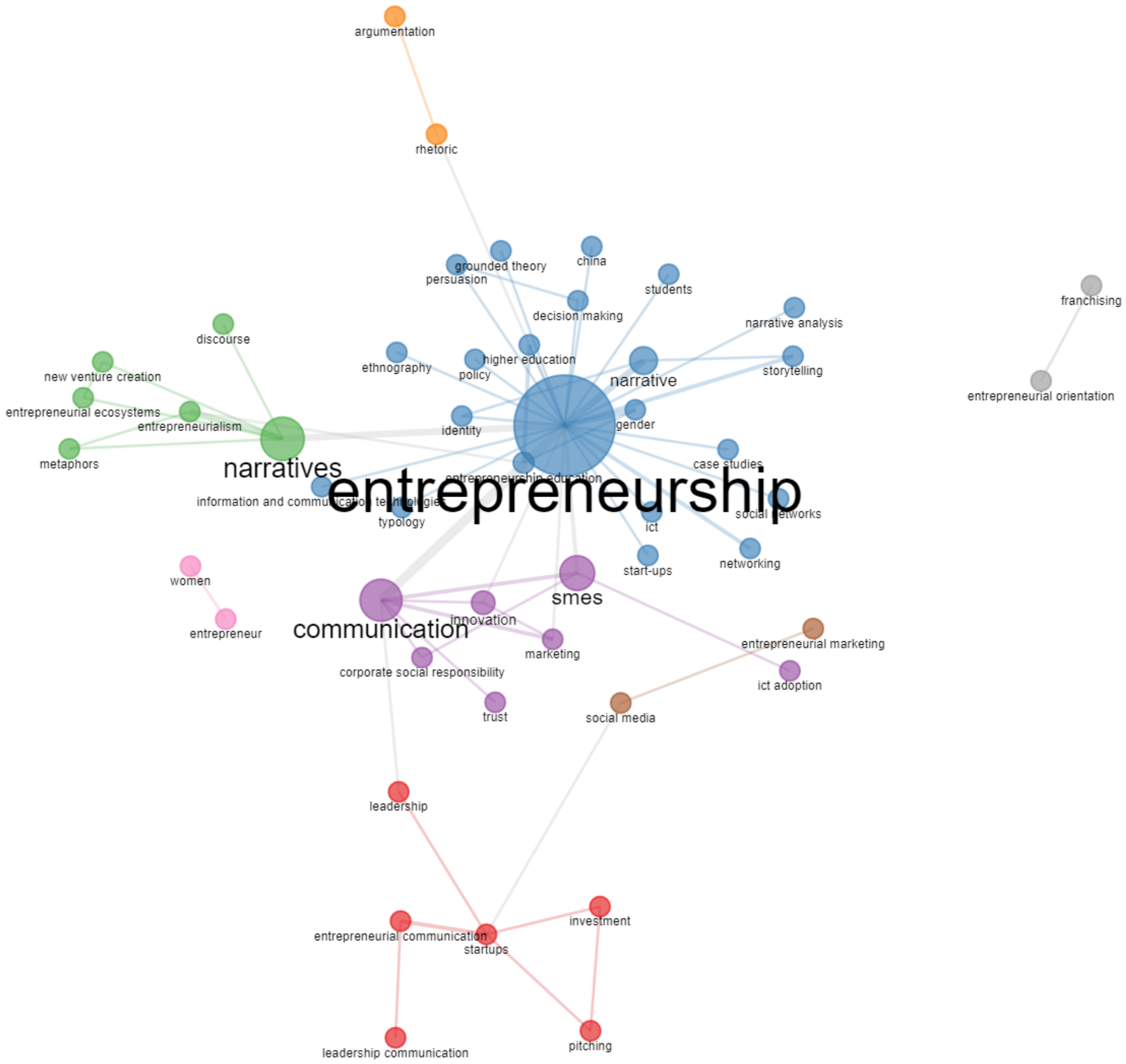
Our study has some limitations, which are explained in more detail below. First, although we used Scopus—a relevant database that has been a valuable tool for many previous entrepreneurship studies—this is not the only database that could have been used. Therefore, this study considered only articles included in Scopus or identifiable through it. Second, when selecting the search terms, we included many aspects of entrepreneurial communication in the keywords. However, other researchers could have written about entrepreneurial communication but chosen other terms for their article titles. Third, we limited our bibliometric analysis to peer-reviewed articles; thus, this sample did not include articles published in gray literature. Fourth, this study was limited to bibliometric analysis. We did not conduct a detailed content analysis for a structured literature review. Fifth, similar to previous bibliometric analyses (Block et al., 2020), we did not use a full year as the end date but instead conducted the analysis in October, so the analysis and interpretation of citations must take this into account.

2.8 Conclusion

With this bibliometric analysis, a further step has been taken to systematically capture the research field of entrepreneurial communication (Godulla & Men, 2022). Although Wiesenberg et al. (2020) provided an overview of the six dimensions of communication in their structured literature review, we extended this with a bibliometric approach to show the structure of entrepreneurial communication research. Thus, this paper provides an orientation for future research in entrepreneurial communication.

Appendix

Figure 2-6: Co-occurrence analysis with keywords



3. Study 2 – Trust in the investor-relationship marketing of startups – a systematic literature review and research agenda

Authors: Manuel Kaiser and Elisabeth Berger[4]

Abstract

An important task of entrepreneurs is the management of investor relations. Past literature has emphasized the role of trust for managing relationships and regulating their quality. However, the landscape of investors has changed due to digitalization, so that new players have joined and expanded the investor offer. Entrepreneurs also often enter into relationships with multiple investors, which can challenge investor relationship marketing. To provide an overview, we conduct a structured literature review on the entrepreneur's relationship marketing with four key investors: venture capitalists (VCs), business angels (BAs), banks, and crowd funders. The paper improves the understanding of trust as a concept in the management of investor relations and identifies directions for future research. The results show that research has predominantly studied trust in the VC-entrepreneur relationship. Across different investors, the primary focus has been on factors that influence trust building, especially investor communication and entrepreneur-investor fit. Furthermore, the results show that trust has an influence on cooperation by strengthening the relationship and reducing risk.

Keywords: Entrepreneurial marketing, Entrepreneurial finance, Trust, Relationship marketing, Investor relations, Startup

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[4] Status and reference: This study is published in Management Review Quarterly: Kaiser, M., Berger, E.S.C., Trust in the investor relationship marketing of startups: a systematic literature review and research agenda. Management Review Quarterly 71, 491–517 (2021). https://doi.org/10.1007/s11301-020-00191-9

3.1 Introduction

New ventures are in desperate need of financial capital to realize their growth aspirations. Investors are thus of the utmost importance to provide entrepreneurs with financial resources (Huang & Knight, 2017). In addition, investors can also provide technological support, their social capital (Block et al., 2018), or act as mentors (Mitteness et al., 2012). Therefore, a good relationship with investors can enable entrepreneurs to maximize the benefits available. Past research has emphasized the role of trust in that relationship (Cherry, 2015; Pollack et al., 2017). Recent developments in the practice of entrepreneurial financing, largely enabled by digital technologies have led to new actors and new challenges in the entrepreneur-investor relationship (e.g., Bellavitis et al., 2017; Block et al., 2018; Bonini & Capizzi, 2019; Drover et al., 2017; Wohlgemuth et al., 2016), spurring a need to unravel this complex relationship. One example of digital technologies affecting entrepreneurial finance relationships is crowdfunding, which requires entrepreneurs to convince investors in the digital space (Feola et al., 2021) and develop trust across geographical borders into virtual communities (Guenther et al., 2018). Because entrepreneurs often collaborate with several investors at the same time (Moritz et al., 2016), this may also have different effects on the development of trust with different investors (Pollack et al., 2017). In this study, we focus on the relevance of trust in successfully managing investors from the entrepreneur's perspective.

The establishment and maintenance of relationships with investors is referred to as investor relationship marketing (Tuominen, 1997). Relationship marketing is part of the entrepreneurial marketing (EM) tasks of startups (Most et al., 2018; Stokes, 2000). Trust plays a vital role in investor relationship marketing, as it affects the relationship quality between two parties (Pollack et al., 2017). Trust means that a person (trustor) has expectations of another (trustee) and is vulnerable to whether or not the trustee performs the expected actions, independent of control (Mayer et al., 1995).

The complex competitive environment and the importance of trust in managing investors creates a need to understand how entrepreneurs can build trusting relationships with different investors in their relationship marketing. However, trust is scarcely examined in the entrepreneurship literature, and there is a lack of an overview that processes the concept of trust in this complex landscape (Cherry, 2015; Pollack et al., 2017; Welter, 2012). For this reason, the current paper aims to answer the following questions: What is the state of the art of trust in the entrepreneur-investor relationship? And what are paths for further research in this research stream?

We identify 32 articles published in 22 journals between 1996 and 2019, of which the majority focuses on the trust between entrepreneurs and venture capitalists (VCs). A key topic in the literature is the relationship-focused antecedents of developing trust between entrepreneurs and investors, especially communication and partner fit. Studies examining the outcomes of investor-relationship marketing remain the exception.

This article contributes to the literature in three ways. First, we systematically identify and review the existing research on trust in the entrepreneur-investor relationship. Thus, to the best of the authors' knowledge, this literature review is the first to provide an overview of trust in this relationship. Second, this paper develops a framework to structure the existing literature on the basis of the antecedents and outcomes of trust. By doing so, this paper contributes by uncovering gaps in research and accordingly points to paths for future research and also derives practical implications for entrepreneurs' investor relationship marketing.

To answer the research questions, this article is structured as follows: Section 3.2 lays out the theoretical context of the analysis. Section 3.3 then explains the research approach of this paper. Section 3.4 analyzes the existing literature and highlights research gaps. The discussion of a future research agenda follows in Section 3.5, and Section 3.6 points to the limitations and draws a conclusion.

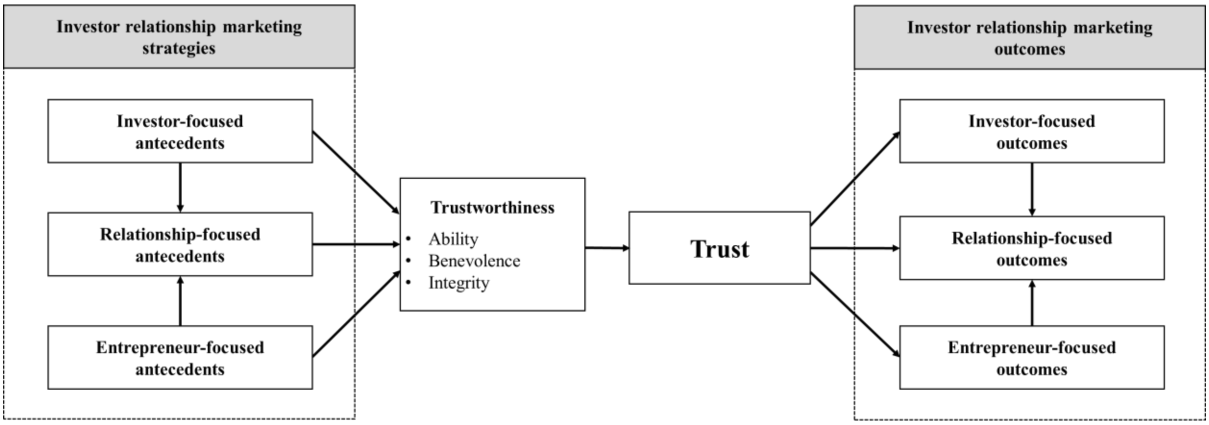
3.2 Investor-relationship marketing and trust: the context of analysis

As a part of their EM efforts, entrepreneurs need to manage relationships with different stakeholders (Gruber, 2003; Hills et al., 2008; Most et al., 2018). These relationships build the foundation of EM, allowing the startup to grow and build a competitive advantage (Hills et al., 2008). The investor is an important stakeholder (Gruber, 2003; Stokes, 2000; Tuominen, 1997), because the entrepreneur-investor relationship provides financial support and entrepreneurs benefit from the skills and social capital of the investor (Block et al., 2018; Mitteness et al., 2012). Consequently, entrepreneurs have to establish trusting relationships with their investors (Cherry, 2015; Pollack et al., 2017). Research shows that the environment in which the relationship is embedded is characterized by uncertainty, risk (Burns et al., 2016; Pollack et al., 2017), information asymmetries (Cable & Shane, 1997; Kollmann & Kuckertz, 2006), and the threat of opportunistic behavior (Cable & Shane, 1997). As a result, contracts between the parties cannot cover everything (van Osnabrugge, 2000), which necessitates that trust plays a key role (Gulati & Sytch, 2008; Mayer et al., 1995), as it regulates the relationship (Welter, 2012).

A conceptual examination of trust shows that the literature is intensively concerned with the concept trust (Olsen, 2008) and that accordingly different definitions exist. Moreover, when different disciplines deal with the term, this also leads to the development of unique views, depending on the discipline (Doney & Cannon, 1997). But despite this heterogeneity, the literature shows that distinct characteristics emerge which can be found in the individual definitions (Moorman et al., 1992; Zahra et al., 2006). The definitions therefore share some common ground in that trust is related to whether one is willing to make oneself vulnerable (Mayer et al., 1995; Rousseau et al., 1998; Whitener et al., 1998), what expectations (Das & Teng, 1998; Mayer et al., 1995; Rousseau et al., 1998; Sirdeshmukh et al., 2002; Whitener et al., 1998) or beliefs one has in the partner (Anderson & Weitz, 1989; Whitener et al., 1998) and the associated risk within the relationship (Sheppard & Sherman, 1998; Whitener et al., 1998). A further characteristic results from the expectations, because the trustor does not control their realization (Mayer et al., 1995; Whitener et al., 1998). Beside the concept of trust there is another term in trust literature, trustworthiness, which has to be classified here (Mayer et al., 1995; Möllering, 2019). Trustworthiness refers to the trustee and its characteristics, such as benevolence, integrity, and ability and is a precursor of trust (Mayer et al., 1995).

To explain the concept of trust in the context of relationship marketing, Morgan and Hunt (1994) developed the Commitment-Trust theory, a frequently cited model. This model conceptualizes trust and commitment as keys that represent the quality of a relationship. The structure of this model is based on the assumption that various antecedents exist, which influence trust and commitment positively or negatively. This relationship quality (trust and commitment) then in turn influences the outcomes of a relationship. Through this structure, Morgan and Hunt (1994) provide an important basis for the relationship marketing research, because it highlights the fact that trust is multidimensional. Therefore, various scholars have used and developed the basic principles of this model to further understanding trust (e.g., Doney & Cannon, 1997; Palmatier et al., 2006). For the entrepreneur-investor context, this approach is therefore also used to provide a framework for this literature review. Figure 3-1 presents the integrative framework we have developed, based on the following considerations. There are several antecedents of trust (Doney & Cannon, 1997; Morgan & Hunt, 1994; Palmatier et al., 2006), which represent relationship marketing strategies (Palmatier et al., 2006). At the level of these strategies (antecedents) there are different intermediate levels, which are partner-specific (entrepreneur or investor) or concern the relationship (Howorth & Moro, 2006; Palmatier et al., 2006). However, before these strategies can lead to trust, trustworthiness must be established (Howorth & Moro, 2006; Mayer et al., 1995). For this reason, relationship marketing strategies signal trustworthiness, which then leads to trust. Subsequently, trust influences various outcomes of a relationship, which are also partner-specific (entrepreneur or investor) or concern the relationship (Palmatier et al., 2006).

Figure 3-1: A framework for trust in investor-relationship marketing



3.3 Review method

3.3.1 Article identification

To review the current state of research on trust in the entrepreneur-investor relationship, we conducted a structured literature review (Fisch & Block, 2018; Tranfield et al., 2003).

The trust literature argues that the concept has attracted the attention of various disciplines (see Section 3.2), which is why previous literature reviews on trust in relationships with other contexts should be helpful in identifying relevant terms. For the selection of investor terms, the literature was searched for relevant investor types. VCs and business angels (BAs) are central investors and therefore important for entrepreneurial finance (e.g., Block et al., 2018; van Osnabrugge, 2000), as are banks (e.g., de Bettignies & Brander, 2007; Schulte, 2012). Crowdfunding represents an emerging form of startup financing (e.g., Block et al., 2018; Bonini & Capizzi, 2019). Based on these considerations, the terms *investor**, *venture capital**, *business angel**, *bank**, and *crowd** were used to describe the various investors and capital providers. In general, *investor** covers this topic in general, while the other terms are used to search specifically for such investors. As the trust literature discusses trust and trustworthiness (Mayer et al., 1995), we have used *trust** as a term for this. Furthermore, other literature reviews on trust also use the term *trust* to identify relevant articles in this context (e.g., Bozic, 2017; Kostis & Näsholm, 2020), which is why we consider it useful for our review. The selection of synonyms for startups is in line with Köhn (2018) and includes the terms *startup**, *start-up**, *entrepreneur** and *new venture**. The following search string, which we used for the search, stems from the areas *investor*, *trust*, and *startup*:

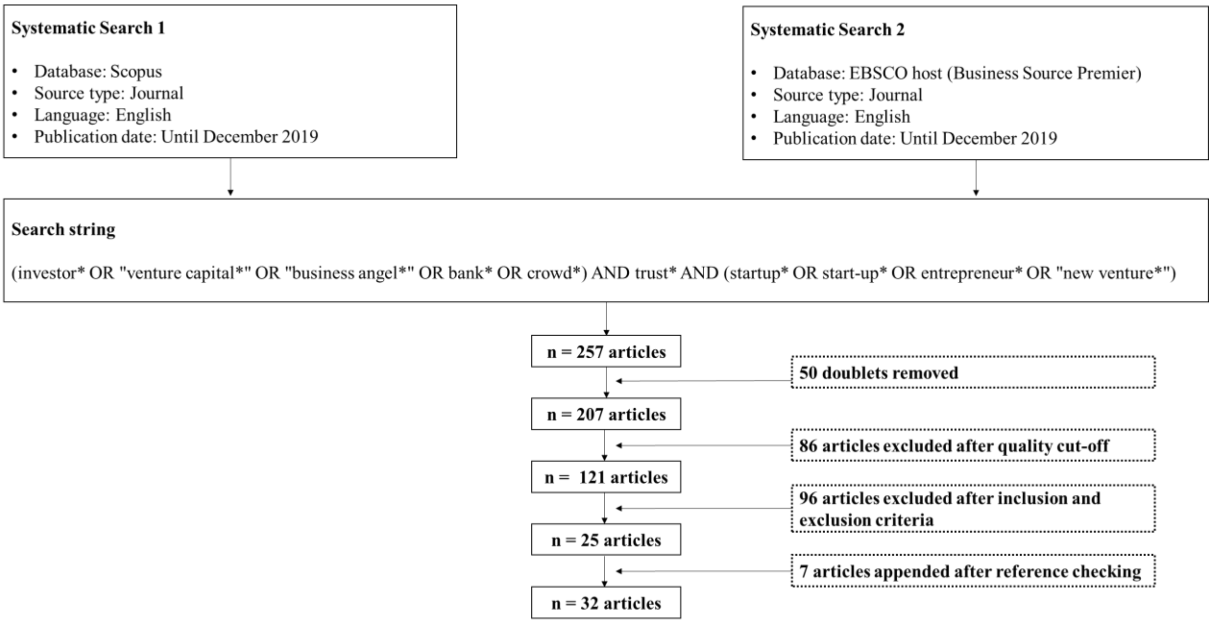
(investor* OR "venture capital*" OR "business angel*" OR bank* OR crowd*) AND trust* AND (startup* OR start-up* OR entrepreneur* OR "new venture*")

The search string was then used in the Scopus and EBSCO host Business Source Premier databases to identify relevant articles searching in titles, abstracts, and keywords. These two databases have also proven useful in other systematic literature reviews (Arz, 2017; Köhn, 2018).

This study focuses on empirical and conceptual papers published in academic peer-reviewed journals in English. This ensures that only high-quality knowledge with an appropriate impact is included in the selection (Köhn, 2018; Podsakoff et al., 2005). For this reason, we have excluded other papers published at conferences, books, book chapters, gray literature, presentations, and dissertations.

The search in January 2020 resulted in 170 articles from scientific journals on Scopus and 87 scientific journal articles on EBSCO host Business Source Premier. This led to a selection of 257 articles. In a first step, all data records were merged, and duplicates removed (n=50), leaving 207 articles. Subsequently, as in other literature reviews (e.g., Brüne & Lutz, 2020; Köhn, 2018; Michler et al., 2020), a quality cut-off put in place to ensure the quality of the selected journals. We used the scientific journal ranking (SCImagojr) and excluded articles from the lowest quartile (SJR $\leq$ 0.337). As a result, we excluded 86 articles from further searches. We then examined the abstracts of the remaining 121 articles to determine to what extent they dealt with trust between entrepreneurs and contributed to answering the research question. In this step, articles that only mentioned the importance of trust and did not provide any in-depth indications on its emergence or consequences were excluded from the search. Furthermore, some studies focused on the stakeholders of startups in general and therefore did not study specific investors. Any such articles were also excluded. As a result, 25 articles were included in the review. Further studies can also be identified by reference checking (Booth et al., 2012), and that method was also applied to the identified benchmark articles. This made it possible to add a further seven articles to the sample, giving a final total of 32 articles. Figure 3-2 summarizes the search process.

Figure 3-2: Systematic search and selection process



3.3.2 Overview of selected articles

The 32 articles identified span a period from 1996 to 2019 and show that trust in the entrepreneur-investor relationship is a growing research stream. Table 3-1 provides an overview of the 22 journals, in which the articles are published and their ranking as well as the number of articles published in five-yearly sections. When comparing the individual clusters, it must be taken into account that the last cluster covers four years (2016-2019) due to the search period. With regard to the periods of publication, it is noticeable that 21 articles (66% of the selected articles) have been published since 2010. This increase may be due to the financial crisis in 2008, which has led to increased interest in trust building with investors (Strauß 2018). Another explanation may be the development and implementation of digital technologies and their influence on marketing and finance. Furthermore, most articles were published in the journal *Venture Capital* (n=5), followed by *Entrepreneurship: Theory and Practice* (n=4), the *International Journal of Entrepreneurial Behavior and Research* (n=2), the *Journal of Business Venturing* (n=2) and the *Journal of Small Business and Enterprise Development* (n=2). In addition, we note that articles on traditional investors such as VCs, BAs, and banks were mainly published in entrepreneurship and management journals. In contrast, articles on crowdfunding are mainly found in computer science journals. One possible reason for this may be that different disciplines are involved in crowdfunding (e.g., entrepreneurship, finance, computer science). That shows that crowdfunding is a multidisciplinary research stream, which is of interest in other disciplines besides entrepreneurship and management (Mochkabadi & Volkmann 2020).

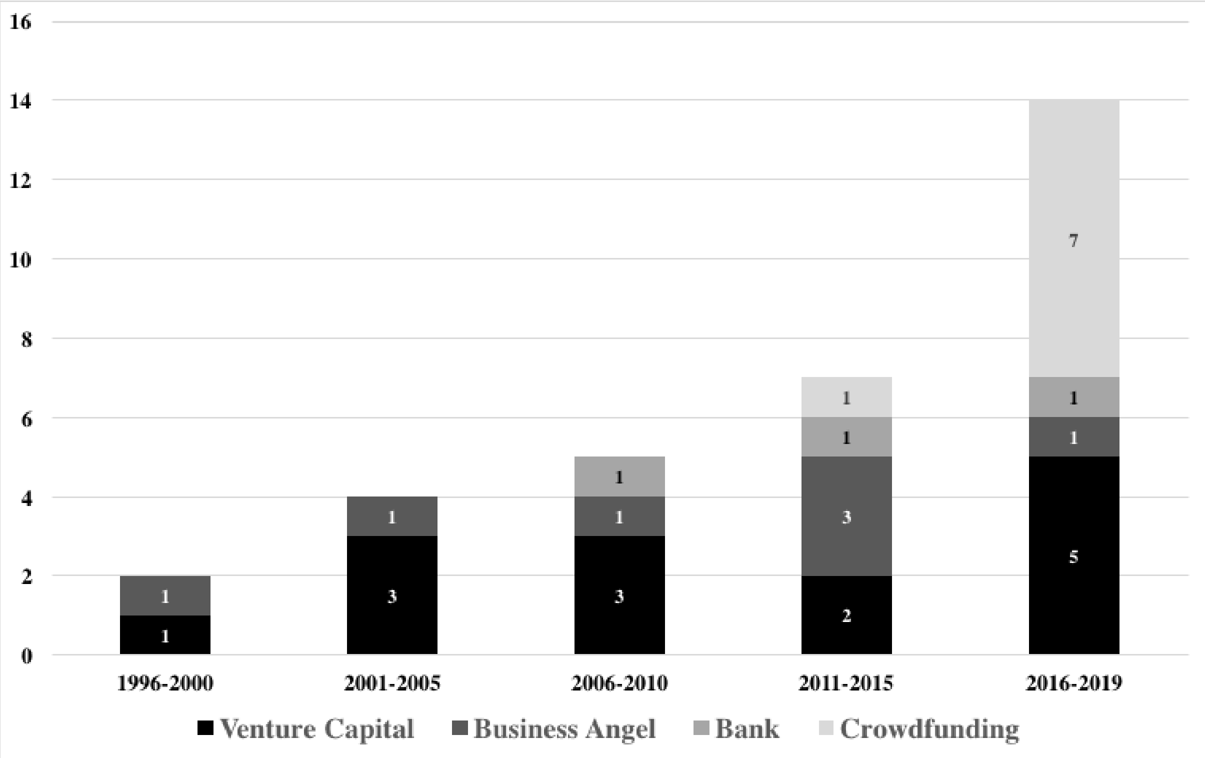
Table 3-1: Descriptive analysis of the identified articles

Journal	Journal Ranking (SJR)	∑	1996-2000	2001-2005	2006-2010	2011-2015	2016-2019[5]
Academy of Management Journal	10.755	1	1				
ACM Transactions on Computer-Human Interaction	0.523	1				1	
Asia Pacific Journal of Tourism Research	0.731	1					1
Cluster Computing	0.338	1					1
Entrepreneurship and Regional Development	1.170	1					1
Entrepreneurship Research Journal	0.529	1					1
Entrepreneurship: Theory and Practice	5.073	4	1	1	1	1	
IEEE Access	0.609	1					1
Industrial Management and Data Systems	1.137	1					1
International Journal of Entrepreneurial Behavior and Research	0.785	2					2
International Small Business Journal	1.987	1				1	
Journal of Business Ethics	1.860	1					1
Journal of Business Venturing	4.835	2			1	1	
Journal of Economic Interaction and Coordination	0.450	1					1
Journal of Management	7.936	1				1	
Journal of Small Business and Enterprise Development	0.504	2				1	1
Journal of Small Business Strategy	0.659	1			1		
Kyklos	1.128	1			1		
Online Information Review	0.656	1					1
Strategic Entrepreneurship Journal	2.817	1					1
Telematics and Informatics	1.206	1					1
Venture Capital	0.665	5		3	1	1	
Total		**32**	**2**	**4**	**5**	**7**	**14**

5 Includes articles published until December 2019 (12-31-2019). The study of Kim et al. (2020) was published online in November 2019 and is therefore part of this review.

Furthermore, it is also clear that the studies specialize in different investors. The studies are dedicated to VCs (n=14), BAs (n=7), banks (n=3), and crowdfunding (n=8). Figure 3-3 shows the distribution of investor subjects over time. It is noticeable that in the early phases of trust research, studies focused on VCs and BAs were particularly prevalent, but recently this distribution has become more heterogeneous owing to the growth of crowdfunding (Moritz & Block 2016).

Figure 3-3: Distribution of articles in review



An overview in the appendix (Table 3-4) provides further information about the methodology, the sample, and the region of data collection for the respective papers.

3.4 Results

3.4.1 Conceptualization of trust in entrepreneur-investor relationship

The theoretical foundations of trust have shown that this concept can be illuminated by different disciplines and that different types of trust exist. For this reason, it is necessary that this section deals with the theoretical foundations of the identified literature in order to be able to place the following statements in this context.

In addition to the term *trust*, *confidence* is also used in the examined articles. Duffner et al. (2009) discuss the differences between trust and confidence. They emphasize the risk that parties assume in trusting each other and the vulnerability, while confidence is described as an evidence-based mechanism. A further distinction is made by Klabunde (2016), who relates confidence to the competencies of the partner, while trust rather conveys the belief that the partner is acting as expected. If we now refer to other papers also dealing with this distinction, it becomes apparent that in addition confidence is primarily conceived of as a future state and the expectations associated with it (e.g., Maxwell & Lévesque, 2014; Panda & Dash, 2016; Shepherd & Zacharakis, 2001). However, confidence and trust are also used interchangeably without explicitly differentiating between the terms (e.g., Dai et al., 2018; Gerber & Hui, 2013; Sapienza & Korsgaard, 1996).

In addition to this conceptual discussion, the various papers also refer to trust with different emphases. A study on the relationship between BAs and entrepreneurs that looks at the dyad describes trust in that context as *intrateam trust* (Bammens & Collewaert, 2014). Another paper uses the term *swift trust* (Harrison et al., 1997), which refers to relationships that involve only limited collaboration (Meyerson et al., 1996). The paper by Schwarzkopf et al. (2010) discusses the existence of goodwill and competence trust. That article refers back to Das and Teng (1996) and explains goodwill in terms of the parties involved being willing to achieve the goals of the relationship, while in the case of competence, the attention is on the ability to achieve this. Goodwill is based on values and norms shared by the parties. Hain et al. (2016) distinguish between institutional and relational trust. Institutional trust represents a macro level of trust, refers to the general trustworthiness of others and can be characterized by cultural and formal rules (Hain et al., 2016; Welter, 2012). Others distinguish between trust based on human emotions (affect-based) and trust that is more rational (cognitive-based) (Dai et al., 2018). A comparable distinction is made by Kang et al. (2016), who describe trust based on emotions as relationship trust and rational trust as calculus. Moreover, the emergence of trust in the entrepreneur-investor relationship is also differentiated according to behavior and character. The last issue concerns the perception and thereby the factors of ability, benevolence, and integrity are included in the investigation, which should explain the trustworthiness of a partner. The explanation of behavior is based on procedural justice (Middelhoff et al., 2014). Both the explanations of the conceptual distinction between confidence and trust and the various trust concepts are prima facie indications of the complexity and heterogeneity of this topic.

3.4.2 Overview of types of entrepreneur-investor relationships

The literature reviewed focuses on different investors and there are also differences between individual investors (e.g., de Bettignies & Brander, 2007; Wong et al., 2009); it is therefore necessary to discuss those investors separately, which ensures that investor-relationship marketing strategies and outcomes are presented in an investor-specific context. Such a differentiated point of view (investor, entrepreneur, and relationship) has already proven useful in literature reviews with different investors (Drover et al., 2017). To this end, the articles systematically identified were carefully read and then systematized according to their antecedents and outcomes. Table 3-2 summarizes these topics in specific entrepreneur-investor relationships and the structure stems from the integrative framework visualized in Figure 3-1. The topics are elaborated upon in detail for every investor type separately in the following subchapters.

Table 3-2: Antecedents and outcomes of trust in the entrepreneur-investor relationship

Unit of analysis	Key topics in entrepreneur-investor relationship[6]			
	VC	BA	Bank	Crowdfunding
Antecedents				
Investor-focused antecedents	Trustworthiness (Benevolence)	Interest payments	Characteristics, propensity to trust, values, trusting stage, faith in humanity, emotional base	Motivation
Relationship-focused antecedents	Communication, fairness, partner fit, experiences, commitment	Communication, partner fit, interaction	External factors, length and strength, previous interactions, partner fit	Communication, partner fit, interactions
Entrepreneur-focused antecedents	Reputation, quality, success, behavior	Existing investor relationships	Characteristics, community involvement, values	Existing investor relationships
Outcomes				
Investor-focused outcomes	Startup evaluation, learning	Investment intention	-	Investment intention
Relationship-focused outcomes	Strength of the relationship, cooperative behavior	Perception of Startup performance	Amount, cooperation, reducing agency problems	Commitment
Entrepreneur-focused outcomes	-	Investor choice	-	-

[6] Some papers focus on more than one investor, so they have been assigned to the appropriate investors, who provide insights for this literature review. We have attributed the papers of Ferguson et al. (2016) and Middelhoff et al. (2014) to VCs and the paper of Fairchild (2011) to BAs.

3.4.3 Trust in the entrepreneur-venture capitalist relationship

The relationship between entrepreneurs and VCs can be characterized by the fact that VCs provide support beyond the financial aspects and thus contribute to the value creation of the startup (Fairchild, 2011). VC firms obtain their capital from other partners (limited partners), which means that they do not invest their own capital. The investor-entrepreneur relationship is usually the concern of professional fund managers working for the VC firm (De Clercq et al., 2006).

Overall, as summarized in Table 3-2 the results show that the focus of the literature is on relationship- and entrepreneur-focused antecedents, while it is not clear which influencing factors come from the investor. The relationship-focused antecedent cases in particular are a focal topic of previous research and show similarities within the antecedents.

Investors can signal *trustworthiness* to entrepreneurs, as the study by Middelhoff et al. (2014) illustrates. One finding is that benevolence has the strongest influence when trust is formed. Furthermore, it is clear that the other two factors ability and integrity are weaker. The frequency of interaction is used as a moderator in this study, but the results show that this factor has no effect, in relation to ability. A higher level of interaction does not influence whether trust is built or weakened. Procedural justice also shows that this has no influence on trust (Middelhoff et al., 2014).

At the level of relationship-focused antecedents, *communication*, *fairness*, and *partner fit* are three further antecedents (Panda & Dash, 2016; Shepherd & Zacharakis, 2001). Duffner et al. (2009) show a positive connection with communication and trust—a result in line with the findings of Sapienza and Korsgaard (1996), who state that timely feedback influences the positive relationship between the parties and leads to an increase in trust. If an entrepreneur informs an investor in good time how the performance of the portfolio companies is developing, the investor will perceive this as positive in the sense of procedural justice. Furthermore, feedback also becomes relevant at this point, because if there is little control, timely feedback is relevant to perceiving a relationship as fair (Sapienza & Korsgaard, 1996). Another paper argues that trust between VC investors and entrepreneurs can both be directly influenced by the communication between the parties, and also indirectly influence other factors such as signaling commitment and consistency, being fair and just, and the partner fit (Shepherd & Zacharakis, 2001). Panda and Dash (2016) base a part of their study on this concept and distinguish between two phases in this relationship: an early stage and a growth stage. The authors note that the early stage phase is marked by informal communication that takes place via telephone and e-mail and can be described as daily/weekly. In addition, VC investors appear around once a month and visit their portfolio companies. In contrast in a growth-stage relationship, distanced and professional communication occurs that only occasionally requires contact by telephone or e-mail. Overall, Panda and Dash (2016) show that the level of trust is high during the early stage, while it is low(er) in the growth stage. Furthermore, Panda and Dash show that fairness in the early stage phase means being open to startup performance and accepting that the startup could fail. Another paper (Strätling et al., 2012), contributes to the fairness debate in analyzing the effects of contracts between VCs and entrepreneurs on their relationship. The aforementioned study investigates Dutch startups and indicate that entrepreneurs allow control to a certain degree. The study also distinguishes between neoclassical and relational contracts, that is, contracts without a social context and contracts based on informal agreements. The results show that neoclassical contracts have a negative impact on whether the entrepreneur regards the investor as trustworthy. In contrast, relational contracts have a positive influence (Strätling et al., 2012). The measures to create trust can be assigned to the partner fit, because VCs pay attention to the extent to which the measures taken by an entrepreneur to build trust are comparable with their own (Schwarzkopf et al., 2010). An early stage fit between investor and entrepreneur is also created by the same alma mater and the same city where both spent their childhood (Panda & Dash, 2016). Hain et al. (2016) also make a contribution to partner fit, because they devote themselves to institutional trust and beyond that to relational trust. The latter is particularly important for investments in developed economies. For example, relational trust can assist in dealing with geographical or cultural borders (Hain et al., 2016). Furthermore, both interpersonal attraction and the strength of relationship norms can be precursors of trustworthiness (Ferguson et al., 2016). Another criterion that VC investors consider when deciding whether to invest or not are *experiences* that it has had previously with the entrepreneur. This means that these experiences together with the cooperation are the basis for the trust sensitivity (Yang & Li, 2018). Another antecedent of trust is *commitment* and can help to build trust if one of the two parties signals their commitment (Shepherd & Zacharakis, 2001). Whether entrepreneurs exhibit commitment to the relationship (the early stage form) can be determined by whether they have invested their own money in the company and how they see their role as investors (Panda & Dash 2016).

Entrepreneurs can influence the trust of VCs through their *reputation* and *quality*, as well as by the *success* of their startup (Duffner et al., 2009). A further explanation has been developed by Haiyan (2019) and acknowledges the dynamics of trust. The author finds that entrepreneurs influence these dynamics through their *behavior*. Furthermore, the author has integrated a further perspective in the form of *learning*, on the basis that the entrepreneur learns something about the investor and the investor learns something about the entrepreneur. Which in turn contributes to the dynamics (Haiyan, 2019).

Trust in the entrepreneur influences how an investor *evaluates* the startup and its performance (De Clercq & Sapienza, 2006) and also has a negative influence on VC *learning* (De Clercq & Sapienza, 2005). In the case of the relationship-focused antecedents, it is assumed that the *relationship strength* also depends on the degree of trust (Schwarzkopf et al., 2010). Furthermore, the model of De Clercq and Sapienza (2001) integrates trust to analyze relational rents in this relationship. The authors assume that the strength of the relationship depends on the degree of trust. If trust is created between entrepreneurs and VCs, it influences the *cooperative behavior* of the parties (Panda & Dash, 2016; Shepherd & Zacharakis, 2001). Shepherd and Zacharakis (2001) argue that an increase in trust leads the respective party (VC or entrepreneur) to also be confident that the other party will cooperate.

3.4.4 Trust in the entrepreneur-business angel relationship

Business angels are individuals who support entrepreneurs with financial resources (Sudek, 2006) in the form of their own money (De Clercq et al., 2006). Furthermore, they also provide further value-adding activities, such as mentoring advice or access to their networks (De Clercq et al., 2006).

Overall, as summarized in Table 3-2 research on trust in the entrepreneur-business angel relationship remains scarce. There are many individual antecedents and outcomes, but they are highly fragmented.

The development of trust on the part of BAs can be influenced by *existing investor relationships* to signal trustworthiness to the BA (Sørheim, 2003). Klabunde (2016) examines trust from the perspective of the BA and approaches this issue from an agent-based model that determines the optimal investor strategy. One factor is *interest payments*. This means that whether trust is built or lost depends on how the interest payments on the investment behave. If those interest payments increase, trust increases, and if payments decrease, trust decreases accordingly. In this context, the author also addresses the fact that investors exchange ideas with others from their network in order to assess their levels of return, which ultimately also flows into trust building (Klabunde, 2016). The study of Bammens and Collewaert (2014) find that the quality of *communication* between BA and entrepreneur has a positive correlation with trust. The papers reviewed also show commonalities in their treatment of *partner fit* (Klabunde, 2016; Sørheim, 2003). The study of Sørheim (2003) explains that it is important for investors to create a common basis with the entrepreneur, which is the prerequisite for entering into a trusting relationship over a longer period of time. Furthermore, every *interaction* influences how the investor perceives trust (Sudek, 2006).

The trust-building measures initiated by entrepreneurs in receipt of an investment offer outweigh the measures taken by entrepreneurs who do not receive one (Maxwell & Lévesque, 2014). Therefore, trust influences how BAs determine an *investment intention* (Harrison et al., 1997; Maxwell & Lévesque, 2014; Sudek, 2006). Another consequence of investor trust is the evaluation of *startup performance* because a high level of trust has a positive effect on the assessment (Bammens & Collewaert, 2014). In contrast, trust also plays a role for entrepreneurs when they *choose an investor,* as Fairchild (2011) demonstrates. It is argued that the relationship with BA is more trusting than that with VC, while the added value of VC is higher. Furthermore, this model states that empathy and trust are linked. This also leads to a higher value being attached to the BA than to the VC. The propositions of Fairchild (2011) allow the conclusion that the choice of investor is as dependent on empathy and trust as it is on economic factors.

3.4.5 Trust in the entrepreneur-bank relationship

The entrepreneur-bank relationship is characterized by the fact that a bank manager is responsible for lending to the customer (an entrepreneur) (Howorth & Moro, 2006). In the case of banks, however, it should be noted that, in comparison to VCs or BAs, they have a lending function and, accordingly, no equity participation (De Clercq et al., 2006). If we relate this to the risk associated with trust (Mayer et al., 1995), then banks do not carry the risk that a VC or BA does (De Clercq et al., 2006).

As summarized in Table 3-2, the research findings on trust in the entrepreneur-bank relationship are mainly influenced by the study by Howorth and Moro (2006) that provides a comprehensive model for the antecedents of trust. Beyond that, however, research results available to date are sparse.

Howorth and Moro (2006) show various possibilities of influence which could be regarded as signals of trustworthiness on the part of investors and entrepreneurs. The *characteristics* and *values* are common antecedents, which, through entrepreneurs and investors, help to forge *partner fit* and thus to establish trustworthiness between entrepreneurs and their bank managers (Howorth & Moro, 2006). In addition, Howorth and Moro (2006) also show that entrepreneurs' *community involvement* is a trustworthy signal and that *trust* *propensity*, *trusting stage*, *faith,* and the *emotional base* are also antecedents of investors' trust and *previous interactions* as a relationship-focused antecedent of trust. Moreover, personal trust between a bank manager and an entrepreneur is also influenced by *external factors*, such as the institutional environment, which is in turn further categorized as regulatory or normative, the former referring to the bank and the latter to the social context (Moro et al., 2017). The *relationship strength and length* and *previous interactions* between entrepreneur and bank manager are further antecedents at the relationship level (Howorth & Moro, 2006).

When entrepreneurs request a loan from a bank, the *amount* of the loan granted will also depend on the extent to which the bank manager has trust in the borrower (Moro et al., 2017). After the investment, trust influences the *cooperation* between entrepreneurs and banks (Howorth & Moro, 2006). Durkin et al. (2013) show that a lack of trust can have negative consequences for instance that entrepreneurs want to search for other types of investors. In contrast, trusting cooperation can also mitigate negative aspects, such as, *agency problems* (Howorth & Moro, 2006).

3.4.6 Trust in the entrepreneur-crowd investor relationship

Crowdfunding emerged through digitization and brings together many investors on one digital platform, who can then invest in a startup (Kim et al., 2020). This means that the entrepreneur usually cannot establish a personal one-on-one trust relationship but must instead seek to build a relationship with a more or less anonymous mass. Furthermore, there are also various forms of crowdfunding (Kim et al., 2020). In the reviewed papers reward-based crowdfunding (e.g., Dai et al., 2018) and equity-based crowdfunding (e.g., Xiao, 2019) are examined. Crowdfunded investment means entrepreneurs have to deal with investors who may have various motivations and who are willing to accept different levels of risk (Mochkabadi & Volkmann, 2020).

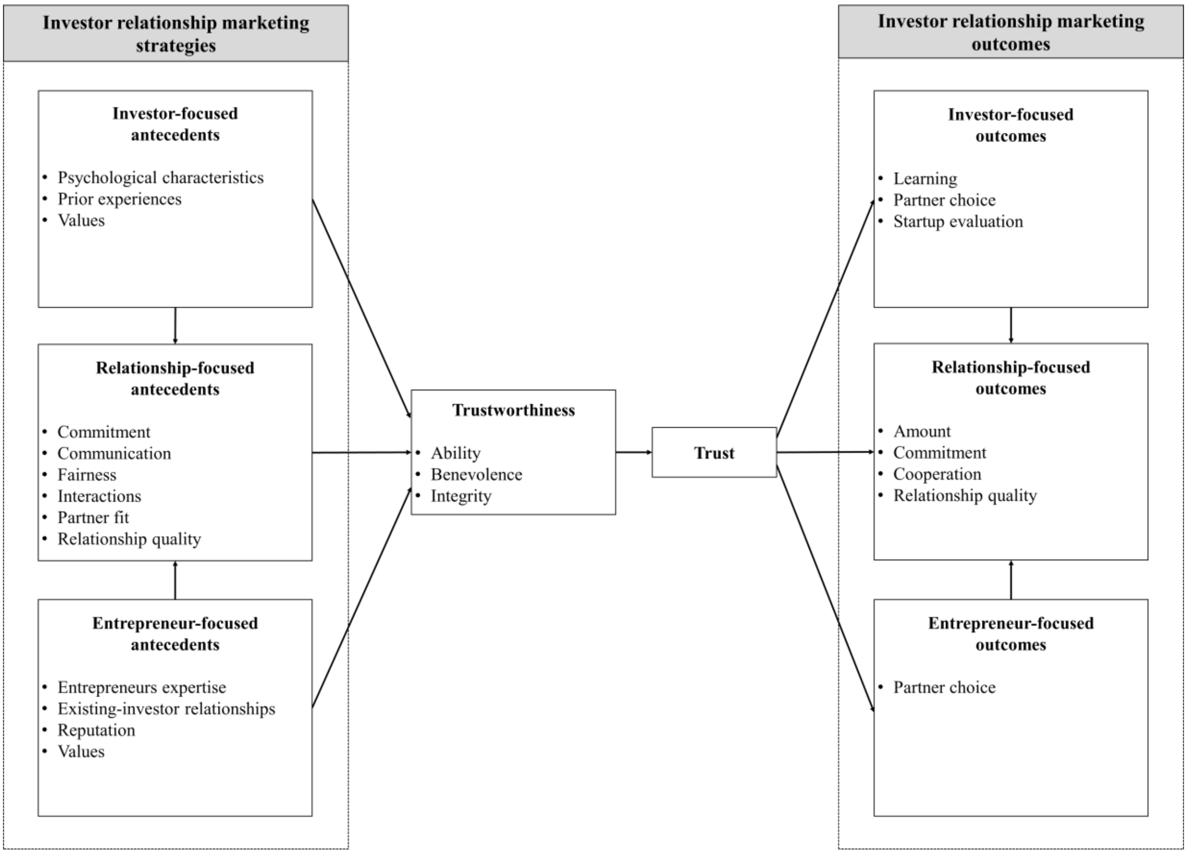
As summarized in Table 3-2, the research on the entrepreneur-crowd investor relationship to date shows that it has mainly been individual antecedents that have been investigated to determine the development of trust. The possible outcomes of trust have so far rarely been investigated.

Existing investor-relationships play a role in the development of trust; thus, their credibility is important for the entrepreneur whether a follow-on investor invests (Xiao, 2019). Moreover, for crowd investors who invest in startups through crowdfunding campaigns, *motivation* is an antecedent that helps to build trust (Kim et al., 2020). The aforementioned study investigates tourism crowdfunding, combines motivation with trust, and reports that both intrinsic and extrinsic motivation positively influence trust building. Among the relationship-focused antecedents, *communication* is discussed (Gafni et al., 2019; Zhao et al., 2017). While entrepreneurs present their startup at the online pitch, they can gain the trust of investors by frequently referring to them by name (Gafni et al., 2019). Another way to build trust through communication is through social media such as Facebook and social media platforms can be used by entrepreneurs to disseminate information, which influences trust (Dai et al., 2018). Zhao et al. (2017) state that *partner fit* also contributes to trust building for crowd investors. Entrepreneurs who take trust management into account when seeking crowdfunding can influence the *investment intention* in two ways (Zheng et al., 2016): either centrally through creditworthiness or peripherally through the *interaction* between the parties. Zheng et al. (2016) report the latter in particular shows greater effects. This is because the interaction between investor and entrepreneur can foster a relationship of trust, which subsequently leads to an investment decision (Zheng et al., 2016). Kang et al. (2016) examined calculus trust and relational trust and found that they jointly or separately influence investment intention. Furthermore, trust also influences *commitment* (Zhao et al., 2017) and a lack of trust is one reason why investors choose not to invest (Gerber & Hui, 2013).

3.5 Discussion and future research agenda

Figure 3-4 visualizes the key concepts in the reviewed literature on trust in entrepreneur-investor relationships. This figure bundles the identified topics from Table 3-2 and shows them comprehensively in the developed framework from Figure 3-4.

Figure 3-4: Key findings for trust in the entrepreneur-investor relationship marketing



With regards to the investor-relationship marketing strategies, the academic discussion focuses strongly on the relationship-focused antecedents. These antecedents show commonalities regardless of the investor type. Under the term partner fit, commonalities between entrepreneur and investor can be summarized, such as common values, social distance, or common basis (e.g., Howorth & Moro, 2006; Shepherd & Zacharakis, 2001; Sørheim, 2003; Zhao et al., 2017). Another frequently discussed relationship-focused antecedent we identified is the communication in relationships with VCs, BAs and crowd investors (e.g., Bammens & Collewaert, 2014; Shepherd & Zacharakis, 2001; Zhao et al., 2017). However, findings relating to the investor-focused and entrepreneur-focused perspectives are rare, indicating the necessity for further research in this area. Drawing from the relationship marketing literature, scholars may investigate how each partner's expertise or competence as well as potential existing disagreements among the partners (Palmatier et al., 2006) affect trust in the entrepreneur-investor relationship.

The crowdfunding literature shows that the relationship between entrepreneurs and crowdfunding investors is built through online communities (e.g., Gafni et al., 2019; Zhao et al., 2017). Accordingly, the interaction between these parties also takes place online, for example through pitch videos (Gafni et al., 2019) or the use of social media (Berger et al., 2015; Dai et al., 2018). As the paper by Panda and Dash (2016) shows, the interaction between VCs and entrepreneurs takes place mainly in an informal and, in the growth stage, distanced manner. In the crowdfunding context past research emphasizes the role of trustworthiness signaled in investor communication to reduce information asymmetries (Moritz et al., 2015). This leads to the question of what influence communication in virtual communities (e.g. Facebook posts, tweets) has on the development of trust in relationships with traditional investors such as VCs, BAs, or banks.

Information on the outcomes of investor-relationship marketing remains difficult to access because there are few findings relating to the individual levels, which is particularly true of entrepreneur- and investor-focused outcomes. Accordingly, further studies might contribute by exploring the consequences of trust for entrepreneurs and investors. A further insight is that trust is an important condition when it comes to the investment decision of investors. This emphasizes the importance of trust for the relationship and that it must be managed accordingly. Furthermore, De Clercq and Sapienza (2006), show that trust influences the evaluation of the startup performance and Duffner et al. (2009) relates trust directly to success. This leads to the question of whether there may be further outcomes that are influenced by trust but have yet to be isolated. In the relationship marketing literature, for example, loyalty and word-of-mouth are discussed as further outcomes of trust (Palmatier et al., 2006). Therefore, in future studies, scholars could investigate the impact of trust on these constructs in investor relationships.

Furthermore, the literature on trust in the entrepreneurship discipline shows that the work done so far mostly refers to the positive aspects of trust. This means there is a lack of critical debate, which also reveals the dark sides of this concept (Welter, 2012). Although negative aspects of trust are addressed in various papers (e.g., Bammens & Collewaert, 2014; Durkin et al., 2013), there is still potential to supplement these views. For example, trust can lead to blindness in strategic decision making or influence the choice of (weaker) control mechanisms (Zahra et al., 2006). Further studies could therefore ask, whether trust in the entrepreneur-investor relationship might cause negative side effects.

The 32 articles identified are devoted to trust in different phases of the relationship, that is, the trust between entrepreneur and investor is mapped in the empirical studies on a particular. There are studies that can be assigned to the pre-investment phase (e.g., Gafni et al., 2019; Sørheim, 2003), others are dedicated to the post-investment phase (e.g., Bammens & Collewaert, 2014; Middelhoff et al., 2014). If one considers, however, that the emergence of trust is a process (Doney & Cannon, 1997; Swan et al., 1985), there are few studies at this point that illustrate the trust between entrepreneur and investor in several phases of the relationship (Panda & Dash, 2016). Future studies shedding light on the relationship between entrepreneur and investor from the pre-investment to the post-investment phase could thus also show which antecedents and outcomes are present in the respective phases and how they might change.

Further research opportunities arise from changes in the area of entrepreneurial finance (e.g., Bellavitis et al., 2017; Block et al., 2018; Bonini & Capizzi, 2019; Drover et al., 2017; Wohlgemuth et al., 2016). This literature review shows that, with a few exceptions, previous research has discussed individual investors in isolation. The development of the financing landscape, however, makes it necessary to abandon that isolation and connect investors (Drover et al., 2017). As mentioned in the introduction, this is how entrepreneurs do it in practice (Moritz et al., 2016), future studies might start here and explore how these multiple entrepreneur-investor relationships affect trust building with the entrepreneur.

Although this structured literature overview has addressed a new form of financing in the form of crowdfunding and reflects the state of research, there are emergent financing possibilities, such as accelerators or family offices (Block et al., 2018). In addition, research gaps are also apparent in the area of trust with established investors, such as corporate venture capitalists, which have largely been neglected up to now. This accordingly leads to the question of how entrepreneurs can establish trusting relationships with these investors.

Digital technologies largely affect entrepreneurship and innovation (Berger et al., 2021), we also expect that this will impact the relationship between entrepreneurs and investors. The blockchain technology enables financial transactions via decentralized platforms (Chen & Bellavitis, 2020) and is the basis for Initial Coin Offering (ICO), a form of startup financing through tokens as currency (e.g., Block et al., 2021b; Fisch, 2019; Huang et al., 2020). Blockchain technology may solve agency problems and thereby act as a mechanism for trust (Shermin, 2017). Personal trust may be complemented or even shift entirely towards technology. To this point, whether the concept of "trustless trust" will become reality and might also affect traditional entrepreneur-investor relationships, which currently strongly rely on trust, remains mere speculation. Driven by blockchain technology advancements in practice, future research may explore how the blockchain technology affects trust in the investor marketing of startups.

This literature review offers both theoretical implications and practical advice to reveal trust for practitioners. The research framework shows that trust is a multidimensional concept, which is conceptualized by different antecedents and outcomes (Morgan & Hunt, 1994). Our framework is therefore a basis and offers an overview for entrepreneurs who want to manage relationships with investors. The entrepreneur has to develop an awareness of the role of trust in the entrepreneur investor-relationship and in investor-relationship marketing has to ensure that various partner-specific antecedents (e.g., investors' motivation, quality of the entrepreneur, and reputation) influence the creation of trust. Furthermore, this literature review shows that the state of research on the relevant antecedents varies depending on the type of investor. Nevertheless, two central antecedents can be identified that entrepreneurs should consider: entrepreneurs must pay attention to communication and the partner fit in the investor relationship. The consequence for investor-relationship marketing is that entrepreneurs have to develop suitable strategies so that these antecedents contribute to trust building. Suppose an entrepreneur wants to convince a VC investor and signal trustworthiness through communication; one component of the communication strategy could be to communicate his or her reputation and quality and to demonstrate the startup's successes to date (Duffner et al., 2009). In addition, the entrepreneur could collect information about the investor that signals similarities, such as hometown or alma mater (Panda & Dash, 2016) and can communicate such "fun facts" during the pitch. Entrepreneurs might also use other areas of EM to create an investor communication that develops trust. For example, public relation activities and social media could be used to share information about themselves and the startup, thereby also creating a reputation in the environment. This paper also gives an insight into the possible outcomes of trust. The outcomes show that entrepreneurs can influence the cooperation with their investors through trust, by creating a strong relationship and minimizing risks that may arise. In summary, the findings of this paper can be used to establish and maintain entrepreneur-investor relations in practice. A summary of the research gaps and the suggested paths for future studies is presented in Table 3-3.

Table 3-3: Future research agenda for trust in the entrepreneur-investor relationship

Challenges and current research gaps	Future research directions
Antecedents	
Antecedents of trust to understand the multidimensional character of trust	Exploration of antecedents from the entrepreneur and investor perspectives in more detail (e.g., expertise, conflicts)
Influence of virtual communities on trust with traditional investors, as digitization affects collaboration	Influence of investor communication in virtual communities on trust between entrepreneurs and traditional investors (e.g., social media communication with/ by VCs, BAs)
Outcomes	
Outcomes of trust to understand the multidimensional character of trust	Exploration of outcomes from the entrepreneur and investor perspectives in more detail (e.g., loyalty, word-of-mouth)
Negative consequences of trust to examine potential dark sides of a trusting relationship	Exploration of negative side effects of trust in the entrepreneur-investor relationship (e.g. blindness, lack of control)
Time	
Longitudinal studies to conceptualize the development of trust as a process	Measurement of trust at different stages of an entrepreneur-investor relationship and analysis of development of trust over time (e.g. pre-, post-investment)
Investor landscape	
Multiple entrepreneur-investor relationships, due to common practice entrepreneurs of multiple investors	Consideration of interdependencies, impact on trust and consequences for investor marketing due to multiple investors possibly engaged at different times (e.g., Crowd/VC, BA/VC)
Further (new) investor types, as entrepreneurs can get capital from different sources and new types of investors emerge	Examination of trust between entrepreneurs and other players in the entrepreneurial finance landscape (e.g., accelerators, family offices)
Effect of blockchain on trust in investor marketing, as technology can act as a trust mechanism	Examination of the influence of blockchain technology on trust in the investor marketing (e.g., ICO, existing antecedents, new antecedents)

3.6 Limitations and conclusion

This literature overview is not free of limitations, so these will be discussed in the following section. A central inclusion criterion for the selection of articles was access to peer-reviewed journals published in English (Köhn, 2018; Podsakoff et al., 2005). The scope of the literature overview is therefore not fully comprehensive and thus it is possible that interesting findings presented at conferences or in contributions to books have been overlooked. Therefore, at this point consideration must also be given to whether the quality of the articles should come first, as in this case, or whether the search field should be extended to deliver the broadest possible coverage of the topic. Although the search process forming the basis of the current review was carried out with great care, we cannot completely rule out that individual articles were overlooked. For example, articles may deal with trust, but not as a central topic, meaning it is not included in title, abstract, or keywords. A further point of criticism concerns the evaluation of the present selection, where the influence of the subjective feelings of the authors cannot be completely excluded.

In conclusion, entrepreneurs have an important task in raising capital for their startups and the task necessitates embarking on interpersonal relationships with their stakeholders, the investors. This literature review thus makes an important contribution to research into the entrepreneur-investor relationship. In particular, studies that deal with trust as a concept of this relationship are systematically identified and subsequently discussed in order to identify further research paths. This paper shows that trust in the relationship with different types of investors has already been investigated, but the discussion has been dominated by the focus on VCs. Furthermore, it is evident that above all, the investors and their trust in the portfolio company is an important perspective. These findings are supplemented by the fact that trust is characterized by various determinants, which also offer potential approaches for further studies. Finally, it should be mentioned that this paper has approached trust from the point of view of EM, and thus it enriches the previous entrepreneurship research on trust with a novel perspective and illuminates further research paths.

Appendix

See Table 3-4.

Table 3-4: Overview of selected articles

Authors (Year)	Methodology	Sample	Region
Bammens and Collewaert (2014)	Quantitative	54 ventures with entrepreneurs and BAs	Belgium, USA
Dai et al. (2018)	Quantitative	2,214 entrepreneurs and entrepreneurial project data from IndieGoGo	International
De Clercq and Sapienza (2001)	Conceptual	n/a	n/a
De Clercq and Sapienza (2005)	Quantitative	298 VCs	USA
De Clercq and Sapienza (2006)	Quantitative	298 VCs	USA
Duffner et al. (2009)	Quantitative	75 VCs	Germany
Durkin et al. (2013)	Qualitative	10 entrepreneurs	Northern Ireland
Fairchild (2011)	Conceptual	n/a	n/a
Ferguson et al. (2016)	Quantitative	79 ventures with entrepreneurs and lead-investors (mainly VC)	Canada, France, Germany
Gafni et al. (2019)	Quantitative	16,111 successful projects and 4,113 failed projects pitches	International
Gerber and Hui (2013)	Qualitative	83 entrepreneurs and investors from Kickstarter, RocketHub, and IndieGoGo	USA
Hain et al. (2016)	Quantitative	30,650 VC deals	International
Haiyan (2019)	Conceptual	n/a	n/a
Harrison et al. (1997)	Qualitative	10 BAs	UK
Howorth and Moro (2006)	Qualitative	20 entrepreneurs and 6 bank managers	Italy
Kang et al. (2016)	Quantitative	610 crowd investors	China
Kim et al. (2020)	Quantitative	450 crowd investors	Korea
Klabunde (2016)	Conceptual	n/a	n/a
Maxwell and Lévesque (2014)	Quantitative	54 Startup Pitch	Canada

Table 3-4: continued

Authors (Year)	Methodology	Sample	Region
Middelhoff et al. (2014)	Quantitative	104 entrepreneurs	Germany, Austria, Switzerland
Moro et al. (2017)	Qualitative and Quantitative	Study 1: Eight loan managers Study 2: 450 loan managers	Italy
Panda and Dash (2016)	Qualitative	10 entrepreneur-VC dyads	India
Sapienza and Korsgaard (1996)	Quantitative	Study 1: 44 Students acting as investors Study 2: 118 VCs	USA
Schwarzkopf et al. (2010)	Qualitative	10 VCs	Israel
Shepherd and Zacharakis (2001)	Conceptual	n/a	n/a
Sørheim (2003)	Qualitative	Five BAs	Norway
Strätling et al. (2012)	Quantitative	86 ventures	Netherlands
Sudek (2006)	Qualitative and Quantitative	Study 1: 259 ventures Study 2: 72 BAs	USA
Xiao (2019)	Qualitative	189 projects; 25 platform managers, investors, and entrepreneurs from AngelCrunch	China
Yang and Li (2018)	Quantitative	18 VCs	China
Zhao et al. (2017)	Quantitative	204 crowd investors from FlyingV	Taiwan
Zheng et al. (2016)	Quantitative	829 projects from demohour	China

4. Study 3 – Emotional robustness in times of crisis: the effects of venture funding on the digital communication styles of entrepreneurs

Authors: Manuel Kaiser and Andreas Kuckertz[7]

Abstract

Entrepreneurial communication describes the communication activities of entrepreneurs and is an essential tool for entrepreneurs to build relationships. However, there is a lack of research regarding how entrepreneurs adapt their communication styles in times of crisis. Nevertheless, entrepreneurial communication during a crisis is essential because entrepreneurs must continue communicating with their stakeholders and be visible. In this regard, communication has the central aim of preventing the startup from suffering any damage that may result from the crisis. Thus, the present paper explores potential shifts in the communication styles of entrepreneurs during the first wave of the COVID-19 pandemic. The authors examined the digital footprints of 780 entrepreneurs based in the USA on the social network Twitter. This study used a longitudinal dataset with the software Linguistic Inquiry and Word Count (LIWC) to analyze 110,283 tweets sent pre-crisis and during the first wave of COVID-19. The results of the exploratory analysis revealed a connection between crisis and both analytical thinking and emotional responses. In the case of emotions, the results also suggest that entrepreneurs who had already received funding from venture capital investors remained emotionally robust during the crisis, as evidenced by the expression of more positive emotions compared to entrepreneurs without funding. This study contributes to the understanding of entrepreneurial communication and adds the context of an exogenous shock to this research stream. Furthermore, this study highlights the effects of venture funding on the digital communication style of entrepreneurs, especially in the context of expressed emotions, and suggests emotional robustness for these entrepreneurs.

Keywords: COVID-19, crisis, digital footprints, entrepreneur, communication, Twitter

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4.1 Introduction

Communication is a key factor in shaping relationships between entrepreneurs and stakeholders (Collewaert et al., 2021; Wiesenberg et al., 2020). Communication is used by investors, customers, and employees to develop and maintain relationships (Wiesenberg et al., 2020). Recent research has shown that due to digitalization, entrepreneurial communication increasingly takes place online, and social media channels play an important role in how entrepreneurs present themselves to their stakeholders (Fischer & Reuber, 2014; Yang & Berger, 2017). In addition, these stakeholders are also represented on these networks and can obtain information about the entrepreneurs (Gloor et al., 2020; Moritz et al., 2015).

Although some research has been done on entrepreneurial communication, little is known about how entrepreneurs communicate in times of exogenous shocks. Since entrepreneurs communicate with relevant resource providers through social media (Fischer & Reuber, 2014; Yang & Berger, 2017), and crises can negatively affect the provision of necessary financial resources (Block & Sandner, 2009; Brown & Rocha, 2020; Brown et al., 2020), it remains unclear how entrepreneurs position themselves and communicate in such critical situations. In previous studies, entrepreneurial communication was mainly considered in calmer times, when no global crisis explicitly influenced the behavior of entrepreneurs. Therefore, a better understanding of exogenous shocks is essential to gaining a more thorough picture of entrepreneurial communication. To contribute to this field of study, we explored the digital self-presentation of entrepreneurs in times of exogenous shock to address the following research question:

Research Question: How does a crisis change the digital self-presentation of entrepreneurs?

According to Zerfass et al.'s (2018) conceptual approach, communication fulfills the task of ensuring the survival of an organization and is, therefore, part of the achievement of its goals. For startups, this means that entrepreneurial communication is applied in order to minimize uncertainty for stakeholders and convince them of the venture's quality (Fischer & Reuber, 2014). Thus, entrepreneurs use communication to secure their business and keep their startup running by performing these tasks trough the sharing of the necessary information and building relationships (e.g., Fischer & Reuber, 2014; Wiesenberg et al., 2020). However, in times of exogenous shocks, startups uncertainty is further amplified (Giones et al., 2020) as the entire ecosystem is hit by them: Access to financial resources is difficult and reduced, the economic situation of organizations deteriorates, and the whole value-chain is interrupted to name just a few examples (Miklian & Hoelscher, 2022). Consequently, in times of an exogenous shock when business-relevant systems threaten to collapse, entrepreneurial communication must ensure that entrepreneurs continue to communicate with their stakeholders and signal visibility. During a crisis, entrepreneurial communication has the central task of preventing the startup from suffering any damage that may result from the crisis.

To provide context for the crisis in our study, we used data collected before and during the first wave of the COVID-19 pandemic. In 2019, a novel coronavirus was detected in China (Zhu et al., 2020) and subsequently declared a pandemic by the World Health Organization (WHO) in March 2020 (World Health Organization, 2020a). As a result, the spread of COVID-19 has sent the world into what has been called the greatest exogenous shock since World War II, affecting entrepreneurs and their ventures in numerous ways (Belitski et al., 2022).

To explore the communication of entrepreneurs in this context, we focused on their self-presentation on the social network Twitter. In doing so, we analyzed 110,283 tweets from 780 US entrepreneurs posted pre-crisis and during the first wave of COVID-19, using variables from the Linguistic Inquiry and Word Count (LIWC) software. The key results of our analysis clearly showed that a crisis puts emotional strain on entrepreneurs and that, consequently, during the first wave of the pandemic, self-presentation was negatively influenced. However, our results indicated that venture capitalist (VC)–backed entrepreneurs, in particular, behaved differently and were less emotionally driven than entrepreneurs without VC partners.

In undertaking this study, we have sought to contribute to two existing research streams. First, we supplemented the discussion of entrepreneurs' communication with information about their digital communication styles (e.g., Fisch & Block, 2021) We found that communication was a central concept in entrepreneur–stakeholder relationships, particularly regarding resource acquisition tasks with different communication tactics (Collewaert et al., 2021; Wiesenberg et al., 2020). Previous entrepreneurial communication research has focused on calmer times, and we have extended this research by considering the context of a global crisis, the COVID-19 pandemic, with its various detrimental economic and psychological effects, for our data. Second, in studying this exogenous shock, we contribute to the general crisis research in entrepreneurship (e.g., Doern et al., 2019; Kuckertz & Brändle, 2021). With a novel dataset of 110,283 entrepreneurs' tweets, we illustrate how they use social media for crisis response and how they adapt their responses before and during an exogenous shock. Thus, through our longitudinal data set, we show how the reaction of entrepreneurs changes over time. Overall, in keeping with the exogenous shock, we have accounted for the influence of context on the behavior of entrepreneurs (Welter, 2011).

4.2 Theoretical background – entrepreneurial communication and crisis

Research on entrepreneurial communication covers all communicative activities between entrepreneurs, their networks, and the startups' stakeholders (Chen et al., 2017; Wiesenberg et al., 2020). From this research, we know that communication is an important part of creating an environment of legitimacy, gaining stakeholders' trust, and reducing overall uncertainty toward innovative startups and their activities (Aldrich & Fiol, 1994; Bammens & Collewaert, 2014; Fischer & Reuber, 2014).

Existing research to date has looked extensively at communication in the context of acquiring resources, examining how entrepreneurs use communication to form relationships with key stakeholders, such as investors (Anglin et al., 2018; Wiesenberg et al., 2020). In investor relations, for example, communication is fundamental in convincing potential capital providers of the validity of an investment during a pitch presentation (Clark, 2008). In particular, to attract the attention of investors, it was found that entrepreneurs used various tactics to position themselves to these stakeholders and maintain their image (Anglin et al., 2018; Collewaert et al., 2021; Martens et al., 2007; Parhankangas & Ehrlich, 2014; van Balen et al., 2019). Studies examining the self-presentation of entrepreneurs have shown that various media are used as message carriers.

For example, business documents such as investment proposals or even a startup's vision statement have all been used (Parhankangas & Ehrlich, 2014; van Balen et al., 2019). Furthermore, communication is not limited to linguistics but instead is possible through both verbal and non-verbal cues, including clothing (Collewaert et al., 2021; Zott & Huy, 2007). After an investment is made, communication has been shown as necessary in keeping investors informed with continual updates about the startup project (Kollmann & Kuckertz, 2006). Another reported area of resource acquisition for startups is human resource management, with whom communication also takes place. In line with this, for example, the study by Men et al. (2021a) examined the effects of motivating employee communication and found that motivation had a positive connection to the quality of the entrepreneur–employee relationship.

While communication between entrepreneurs and their stakeholders can be implemented through the tools noted above, communication has become increasingly digitalized. Therefore, entrepreneurs are likely to use social media applications, such as

Twitter, to share information and maintain relationships (Fisch & Block, 2021; Fischer & Reuber, 2014). In addition, the study by Moritz et al. (2015) has shown that investors also actively use social media to form an impression of entrepreneurs and potential investments. Therefore, these digital channels have also been shown to be suitable for entrepreneurs to position themselves with legitimacy, increase trust, and reduce uncertainty (Fischer & Reuber, 2014; Olanrewaju et al., 2020) The study by Mumi et al. (2019) showed that entrepreneurs could also use social media to signal quality during an IPO and thus positively influence the IPO value. Fischer and Reuber's (2014) study of entrepreneurial online communication via Twitter found that entrepreneurs used the app to communicate qualitative signals (e.g., expertise), integrate relationship building through stakeholder language into communication, and also communicate the values and culture of their organizations. Further studies have subsequently revealed differences in digital communication that exist between entrepreneurs and CEOs (Lee et al., 2017), superstar managers (Obschonka et al., 2017), and the general population (Tata et al., 2017). We have built on this research in examining digital communication during a crisis.

Research at the intersection of crisis and entrepreneurship involves, in particular, the study of past crises, both local and global, and how these situations impacted entrepreneurs and their startups (Doern et al., 2019). Previous studies have examined the impact of natural disasters, such as Hurricane Katrina (United States) in 2005 (Runyan, 2006), the 2010 earthquake in Haiti (Williams & Shepherd, 2016), and the local riots in London (United Kingdom) in 2011 (Doern, 2016); other studies have analyzed global crises, such as the 2008 financial crisis (Block & Sandner, 2009; Smallbone et al., 2012) and the present COVID-19 pandemic (Block et al., 2022a; Brown & Rocha, 2020). A central focus of research in this field has been the possible handling of crises – clarifying questions regarding the optimal reactions of entrepreneurs in such situations (Doern et al., 2019). Nevertheless, we were unable to identify existing literature that addressed communication in times of crisis. What we found in the literature, however, indicated evidence suggesting that changes in communication are likely to take place.

During the COVID-19 pandemic, lockdowns were imposed in connection with the pandemic, resulting in a stay-at-home economy (World Economic Forum, 2020), with interpersonal relationships shifting from physical to digital environments (Ratten, 2020). As a result, traditional relationship mechanisms were not fully applicable. The entrepreneur–investor relationship before the pandemic was often predicated on face-to-face communication regarding a startup's development (Brown & Rocha, 2020), and it was understood that startups benefitted from the social capital of their partners. That effect is, however, limited in times of crisis, as these partners also have to deal with and react to the consequences of the crisis (Kuckertz et al., 2020). The findings of Meurer et al. (2022) showed that entrepreneurs engaged in social media to obtain support, especially emotional and social support. In addition, survey results have shown that there has been more activity on social media during the COVID-19 pandemic (Statista, 2020). In summary, the digital space in which entrepreneurs also find themselves opens up further research opportunities for examining their behavior in the context of a crisis (Meurer et al., 2022).

If we consider the possible influences of a crisis on the communication behavior of entrepreneurs, we can identify different dimensions that may be affected by crises. First, communication is key in the procurement of financial resources, a crucial part of entrepreneurship (Collewaert et al., 2021; Wiesenberg et al., 2020). However, the crises have been shown to change the investment behavior of investors by reducing financial resources (Block & Sandner, 2009; Brown & Rocha, 2020; Brown et al., 2020), which means that not all entrepreneurs are affected to the same extent. Second, the impact of crises can be seen on an economic level (Belitski et al., 2022; Kraus et al., 2020; Runyan, 2006) , where entrepreneurs are affected not only financially but also in terms of the ways they work (e.g., changes in working conditions). Third, entrepreneurs have been shown to be emotionally burdened by crises (Doern, 2016), potentially influencing entrepreneurs' mental health (Belitski et al., 2022). Thus, support is increasingly sought via digital communication channels (Meurer et al., 2022). Based on these findings, the following proposition was formed:

> *Proposition:* Crisis events affect entrepreneurial communication – not only in terms of facts communicated but also in terms of subtext and tone. These effects vary with the type of entrepreneur.

4.3 Method

4.3.1 COVID-19 as data context

The novel coronavirus COVID-19, an infectious disease based on the SARS-CoV-2 virus, was discovered in December 2019 in Wuhan, China (World Health Organization, 2020a; Zhu et al., 2020). Subsequently, the first death caused by this virus was reported in China on January 11, 2020 (World Health Organization, 2020a). Thereafter, the first WHO report of January 21, 2020, showed that 282 people had become infected, mainly in China and other countries in

Asia (World Health Organization, 2020b). While China was particularly affected, this virus quickly changed from an epidemic to a pandemic. As a result, the WHO declared COVID-19 a pandemic on March 11, 2020 (World Health Organization, 2020a).

To slow the spread of the virus, governments have taken various measures that have greatly impacted daily life. Since respiratory diseases caused by COVID-19 are transmitted between humans via liquid particles (World Health Organization, 2021), interpersonal contact had to be kept to a minimum. As a result, lockdowns were imposed by governments worldwide, leading to physical distancing (Ratten, 2021). Thus, entrepreneurs were impacted in multiple dimensions. From an economic perspective, the lockdowns led to financial losses (Block, et al., 2022a). Customers reduced their spending (Kraus et al., 2020) or postponed their orders; consequently, the crisis caused startups to lose projected revenue, which in turn threatened their liquidity (Kuckertz et al., 2020). Beyond the impact on startups' revenues, the effects were also evident in the financial resources made available by investors. Previous findings in crisis research explained that critical situations like the COVID-19 pandemic are characterized by uncertainty that influences investors and the allocation of financial resources (Brown & Rocha, 2020; Brown et al., 2020). In addition to the economic effects, psychological effects have also resulted from the COVID-19 pandemic. From this perspective, the uncertainty associated with the crisis has led to psychological stress for entrepreneurs. Accordingly, psychological factors, such as the emotional support offered to entrepreneurs by partners such as investors, have been negatively impacted during the crisis (Giones et al., 2020). Other negative effects that have been identified include a greater sense of loneliness in regard to overall well-being (Williamson et al., 2021). We have built on this context in our study, focusing on the psychological and economical communication dimensions.

4.3.2 Twitter and Crunchbase as data sources

Twitter, founded in 2006, is a social network where users post short messages called tweets to communicate with others. Tweets can be a maximum of 280 characters, making Twitter a microblogging service. According to Twitter's annual report, an average of 152 million users were active on the platform per day in Q4 2019 (Twitter, 2019). Further calculations by Forbes estimated that more than 300 million tweets are produced via Twitter every day (Leetaru, 2019). Twitter is a suitable data source as it offers an application programming interface (API) that allows researchers to access tweets, making it possible for researchers to examine several million tweets in a short time (Fisch & Block, 2021; Liu, 2020). The tweets can then be examined with regard to the language used (Schwartz et al., 2013). Entrepreneurship research benefits from access to such big-data datasets (Schwab & Zhang, 2019; Wiklund et al., 2019), and datasets from Twitter can be collected over multiple time periods (Fisch & Block, 2021). Therefore, data from Twitter combines the opportunity to respond to calls for big-data datasets and longitudinal studies in entrepreneurship research (Wiklund et al., 2019).

Utilizing the Crunchbase database can generate a dataset for tweet analysis and has proved a fruitful tool in entrepreneurship research (Block et al., 2019; Fisch & Block, 2021; Tata et al., 2017; Winkler et al., 2020). Crunchbase, founded in 2007, is a leading database providing information about the entrepreneurial ecosystem and its actors (Kuckertz, 2021). The quality of the data relies on the business community inputting information; for instance, investors submit monthly portfolio updates. The community-supplied data is then validated within Crunchbase via artificial intelligence applications and an internal research team (Ferrati & Muffatto, 2020). The result is an easily accessible database of entrepreneurs, startups, investors, and financing rounds. In addition, it is possible to use the database to obtain deeper insights into and identify the Twitter profiles of entrepreneurs. Furthermore, prior research has shown that the use of Crunchbase and Twitter together can generate large quantities of data to help in analyzing the digital footprints of entrepreneurs (Fisch & Block, 2021; Tata et al., 2017; Winkler et al., 2020). Accordingly, we built our Twitter dataset on Crunchbase to explore entrepreneurs' communications.

4.3.3 Data identification

For data identification, we used Crunchbase with the *people query* and identified 5,085 entrepreneurs located in the United States, a number reduced to a sample of 2,244 entrepreneurs when we added the criterion of having a Twitter profile. We then downloaded the most recent 3,200 tweets sent by each person in the sample using the Twitter *API* and *R* software with the *rtweet* package. That step produced over 2.7 million tweets to serve as the base for the next step.

To explore how a crisis affects the communication of entrepreneurs, two time periods were defined – one before the pandemic (pre-pandemic) and one during the first wave of the pandemic (in-pandemic). March 11, 2020, when COVID-19 was declared a pandemic by the WHO, was used as the reference point for the time periods (World Health Organization, 2020b). Because COVID-19 has taken place over an extended period and in different waves, comparability over longer periods has been difficult to obtain (e.g., 1 year as a time horizon).

We positioned the study during the first wave of the pandemic. Therefore, we organized our study according to the following two time periods (for a similar approach, see Kuckertz, 2021), each 100 days away from March 11: August 24, 2019–December 2, 2019 (pre-pandemic) and June 19, 2020–September 27, 2020 (in-pandemic).

With the pre-pandemic timeframe, we want to determine how entrepreneurs communicate when an exogenous shock is not affecting the entire global economy. Because around the turn of 2019-2020 and especially at the end of December 2019, the first case numbers (COVID-19) became known in China (Zhu et al., 2020). From this stage, therefore, entrepreneurs' communication could already be affected by initial media reports of the novel lung disease. Thereby, a state of *initial buzz* begins from here on, which is not clearly pre- or in-pandemic communication. And to create comparability between the two periods (pre-pandemic vs. in-pandemic), we chose both phases 100 days apart from March 11. This gives us two periods in which the communication can develop its situation-driven effect in each timeframe.

In the next step, more than 2.7 million tweets were further narrowed down using only tweets from the two time periods (pre-pandemic and in-pandemic), as noted above. Furthermore, re-tweets were removed so that only the personal tweets of the entrepreneurs were included in the analysis. The next step was to cleanse those tweets prior to analysis. That cleansing process was necessary because tweets often use cyber slang, such as "w/", which is used online as an abbreviation of the word *with* (Liu, 2020). The tweets were cleansed, for instance, by removing links, name tags, URLs, and hashtags. Since the tweets were previously available individually in a spreadsheet, row by row, they were bundled with R and the function group_*by()* in R's *dplyr* package so that all tweets were assigned to the respective entrepreneurs.

These tweets were input into the LIWC software application to calculate the concepts for each entrepreneur. The LIWC application includes a dictionary with 93 established concepts for the analysis of texts (Pennebaker et al., 2015). Before deciding to use the LIWC concepts, we tested other advanced avenues, such as Moss et al.'s (2018) dictionary. However, in testing and comparing to LIWC, we found that only LIWC gave us the ability to capture communication in its granularity and to analyze the most words (analyzed word count) used via Twitter.

To obtain meaningful results, Fisch and Block (2021) recommend using only content from entrepreneurs who used at least 50 words. For this reason, the sample was further reduced, and the analysis incorporated only the communications of entrepreneurs who recorded at least

50 words during each time period. The data cleansing operations resulted in a final sample of 780 entrepreneurs with 110,283 tweets used for the analysis (pre-pandemic: 51,594 tweets; in-pandemic: 58,689 tweets). The LIWC program supported the analysis by offering a dictionary and indicating what proportion of the words could be analyzed by LIWC. The sample for our study recorded a value of 83.13%.

4.3.4 Variables

4.3.4.1 Dependent variables

In this study, we explored how a crisis affected entrepreneurs' communication, considering the psychological and economic dimensions presented in Section 4.3.1. Both dimensions were analyzed with the software application LIWC2015, version 1.6.0. Table 4-1 provides an overview of the dependent variables and an explanation of each.

Table 4-1: Dependent variables

Variables	Description
Crisis and psychological	
Analytic	Analytical thinking provides information about whether the words used follow analytical thinking patterns (LIWC, 2021)
Clout	Clout includes the social aspects within a person's used words (e.g., confidence, leadership) (LIWC, 2021)
Authentic	Authentic describes the degree to which the person communicates authentically (LIWC, 2021)
Tone	Emotional tone summarizes the two concepts, positive and negative emotions, into one value (LIWC, 2021)
Positive emotions	Positive emotions describe the degree to which the person used positive words (Pennebaker et al., 2015)
Negative emotions	Negative emotions describe the degree to which the person used negative words (Pennebaker et al., 2015)
Crisis and economic	
Work	Work describes the extent to which the person writes about work or job-related topics (Pennebaker et al., 2015)
Money	Money describes the extent to which the person writes about money-related topics (Pennebaker et al., 2015)

The psychological dimension was examined using LIWC's summary language variables (LIWC, 2021). These four variables represent a summary of the psychological content in a text. *Analytical thinking* accounts for the ways in which analytical words are used in a text, as well as which hierarchical thinking patterns are used. *Clout* indicates how confident a person is in their word choice. *Authentic* examines how authentic a text is. The emotionality of a text is measured by emotional *tone* and reveals whether a person tends to use words with positive or negative connotations. We also used the individual scores for *positive* and *negative emotions* to capture emotionality in its granularity.

In order to map the economic dimensions of entrepreneurs' self-presentations, the variables *work* and *money* were selected from LIWC (Pennebaker et al., 2015). The work dictionary in LIWC contained 444 words that were examined in the texts and represented references to work, such as jobs, majors, or professions. The money dictionary was used to search for 226 words in the texts that referred to money, such as *audit*, *cash*, or *owe*.

4.3.4.2 Independent variables

Previous research has shown that entrepreneurial communication is mainly used by entrepreneurs to present themselves to investors and create a positive impression both of the founders themselves and of the startup as an entity (Clark, 2008; Collewaert et al., 2021; Martens et al., 2007). Moreover, in times of crisis, less capital is available (Block & Sandner, 2009; Brown & Rocha, 2020; Brown et al., 2020), and investors are primarily dedicated to their portfolio companies (Gompers et al., 2020a); this is why it is a challenge for entrepreneurs to raise capital in a time of crisis. Since Crunchbase allowed us to identify entrepreneurs who had already received financing and entrepreneurs who had not yet received financing (Ferrati & Muffatto, 2020), this was our independent variable. Therefore, we introduced a dummy variable that distinguished between *VC-backed* (1) and no investor (0).

4.3.4.3 Control variables

To identify other factors influencing the impression management of entrepreneurs, we used various control variables. We defined the variables using Crunchbase alongside Twitter. First, we controlled from Twitter the logged number of *tweets* (Block et al., 2019) sent by each entrepreneur pre-pandemic and in-pandemic to their audience. Second, previous studies have shown that Twitter usage is controllable by the number of words (LIWC variable word count) used in tweets (Fisch & Block, 2021); we, therefore, used the logged LIWC value word count

(*WC*), which was based on the number of all words for each entrepreneur per time segment, as a control variable. Third, we identified the gender of the entrepreneurs in our study through Crunchbase and controlled by *gender* whether the entrepreneur was female (1) or male (0). Fourth, we used Crunchbase data to determine whether the entrepreneur was a *habitual* entrepreneur (1) or whether the startup was the entrepreneur's first venture (0). Lastly, to control the risks associated with a crisis, we used variable *risk* from LIWC. This variable indicated the percentage of words that implied risk, such as danger or doubt (Pennebaker et al., 2015).

4.4 Results

4.4.1 Univariate analysis with paired t-test

We performed a univariate analysis using the paired t-test for the entire sample to provide an initial analysis of the psychological and economic variable means between the pre-pandemic and in-pandemic periods. Table 4-2 shows an overview of the mean values with the standard deviation of the variables used for each phase. In the case of four of the six psychological variables, a significant difference ($p < 0.05$) between the pre-pandemic and in-pandemic periods was identified. During the pre-pandemic phase, the entrepreneurs' communications had significantly higher values for *analytic* (75.270) than during the in-pandemic phase (73.443). In addition, the pandemic also reduced instances of conveying positive emotions, which was why entrepreneurs recorded higher scores for *tone* during the pre-pandemic period (82.158) versus the in-pandemic period (78.754). Specifically, *positive emotions* decreased during the first wave of the pandemic (5.672 pre-pandemic vs. 5.176 in-pandemic), while *negative emotions* increased (1.287 pre-pandemic vs. 1.400 in-pandemic). At a significance level of $p < 0.1$, the *work* variable also represented a significant difference, as it spoke more to work before the first wave of the pandemic (4.627 pre-pandemic vs. 4.487 in-pandemic).

Table 4-2: Univariate analysis with a paired *t*-test

	Mean values over time				t-test (paired)	
Variables	**Pre-pandemic**	**SD**	**In-pandemic**	**SD**	**t**	**p-value**
Psychological						
Analytic	75.270	17.431	73.443	16.977	3.264	0.001
Clout	71.364	15.177	70.595	15.633	1.374	0.170
Authentic	43.260	20.594	42.364	21.180	1.031	0.303
Tone	82.158	20.816	78.754	22.044	3.907	0.000
Positive emotions	5.672	2.547	5.176	2.129	5.513	0.000
Negative emotions	1.287	1.030	1.400	1.029	-2.543	0.011
Economic						
Work	4.627	2.395	4.487	2.480	1.683	0.093
Money	1.758	1.610	1.713	1.547	0.735	0.463

n = 780.

4.4.2 Linear regression with pre-pandemic and in-pandemic

After the initial univariate analysis with a t-test, we used two linear regression analyses to show differences between the two phases: pre-pandemic and in-pandemic. The results of our pre-pandemic linear regression analysis show a positive relationship between *VC-backed* and *tone* (3.636; $p < 0.05$). In more detail of the emotion variables, the results for *positive emotions* also show a positive relationship with *VC-backed* (0.308; $p < 0.1$) but a negative one with *negative emotions* (-0.127; $p < 0.1$). The results for the in-pandemic phase show a positive relationship between *VC-backed* and *tone* (3.110; $p < 0.1$) and a negative relationship with *negative emotions* (-0.160; $p < 0.05$). Thus, the linear regression results suggest that *VC-backed* entrepreneurs generally show a positive relationship with their expressed *positive emotions*. And this expression of the *emotional tone* then remains stable even during a crisis. The results of the two linear regression analyses are summarized in Table 4-3 and Table 4-4.

Table 4-3: Linear regression with data from the pre-pandemic phase

	Dependent variable							
	Analytic	Clout	Authentic	Tone	Positive emotions	Negative emotions	Work	Money
Constant	78.698***	82.718***	49.369***	97.749***	12.706***	0.719**	5.100***	1.658***
	(5.473)	(4.720)	(6.447)	(6.332)	(0.747)	(0.298)	(0.744)	(0.497)
Twitter level control								
log(Tweets)	-1.969	0.441	3.214	3.892*	1.685***	0.055	-0.667***	-0.056
	(1.735)	(1.496)	(2.043)	(2.007)	(0.237)	(0.094)	(0.236)	(0.157)
log(WC)	0.428	-2.061	-2.364	-4.153**	-2.042***	0.018	0.291	0.011
	(1.718)	(1.482)	(2.024)	(1.988)	(0.234)	(0.094)	(0.234)	(0.156)
Entrepreneur level control								
Gender	-4.201**	5.763***	-0.993	4.259**	0.990***	-0.112	-0.137	-0.318**
	(1.651)	(1.423)	(1.944)	(1.909)	(0.225)	(0.090)	(0.224)	(0.150)
Habitual	2.059	-0.175	1.881	-0.274	0.085	-0.030	-0.043	-0.090
	(1.274)	(1.099)	(1.501)	(1.474)	(0.174)	(0.069)	(0.173)	(0.116)
Crisis level control								
Risk	0.181	-1.777**	-5.075***	-8.524***	-0.595***	0.637***	0.247*	0.581***
	(0.978)	(0.843)	(1.152)	(1.131)	(0.133)	(0.053)	(0.133)	(0.089)
Independent variable								
VC-backed	0.298	0.486	-1.926	3.636**	0.308*	-0.127*	-0.265	0.064
	(1.354)	(1.167)	(1.594)	(1.566)	(0.185)	(0.074)	(0.184)	(0.123)
Observations	780	780	780	780	780	780	780	780
R^2	0.027	0.045	0.033	0.087	0.152	0.175	0.048	0.060
Adjusted R^2	0.019	0.038	0.025	0.080	0.146	0.169	0.040	0.053
Residual Std. Error (df = 773)	17.262	14.888	20.332	19.970	2.355	0.939	2.346	1.566
F Statistic (df = 6; 773)	3.549***	6.098***	4.368***	14.691***	23.112***	27.313***	6.462***	8.276***
Note:								*p<0.1; **p<0.05; ***p<0.01

Table 4-4: Linear regression with data from the in-pandemic phase

	Dependent variable							
	Analytic	Clout	Authentic	Tone	Positive emotions	Negative emotions	Work	Money
Constant	80.883***	80.594***	40.135***	91.835***	9.646***	1.055***	3.394***	1.982***
	(5.367)	(4.948)	(6.770)	(6.752)	(0.651)	(0.300)	(0.784)	(0.493)
Twitter level control								
log(Tweets)	-2.335	0.057	1.583	3.263	0.998***	0.137	-0.962***	0.059
	(1.641)	(1.513)	(2.070)	(2.064)	(0.199)	(0.092)	(0.240)	(0.151)
log(WC)	0.295	-1.773	-0.214	-2.947	-1.208***	-0.079	0.721***	-0.089
	(1.655)	(1.526)	(2.088)	(2.083)	(0.201)	(0.093)	(0.242)	(0.152)
Entrepreneur level control								
Gender	-3.453**	5.482***	-0.780	4.196**	0.842***	-0.075	0.072	-0.384***
	(1.604)	(1.478)	(2.023)	(2.017)	(0.195)	(0.090)	(0.234)	(0.147)
Habitual	0.408	0.154	1.009	-0.897	-0.282*	-0.043	0.118	0.096
	(1.232)	(1.136)	(1.554)	(1.550)	(0.149)	(0.069)	(0.180)	(0.113)
Crisis level control								
Risk	-1.481	0.423	-4.021***	-12.389***	-0.464***	0.823***	-0.212	0.275**
	(1.209)	(1.115)	(1.525)	(1.521)	(0.147)	(0.068)	(0.177)	(0.111)
Independent variable								
VC-backed	0.493	-0.238	-0.906	3.110*	0.107	-0.160**	-0.312	-0.161
	(1.310)	(1.208)	(1.652)	(1.648)	(0.159)	(0.073)	(0.191)	(0.120)
Observations	780	780	780	780	780	780	780	780
R^2	0.037	0.035	0.016	0.096	0.099	0.179	0.038	0.022
Adjusted R^2	0.030	0.027	0.008	0.089	0.092	0.173	0.031	0.015
Residual Std. Error (df = 773)	16.722	15.417	21.094	21.036	2.028	0.936	2.441	1.535
F Statistic (df = 6; 773)	4.994***	4.661***	2.066*	13.740***	14.179***	28.080***	5.151***	2.943***
Note:								*p<0.1; **p<0.05; ***p<0.01

4.4.3 Panel data analysis with between-effects

Overall, and irrespective of a crisis, the results of our between-effects regression analysis showed that the variable encompassing *VC-backed* entrepreneurs influenced the overarching emotional tone, negative emotions, and communication regarding work-specific topics. While the *VC-backed* entrepreneurs recorded higher values for *tone* (3.353; $p < 0.05$), there was a negative relationship with *negative emotions* (-0.143; $p < 0.05$). Furthermore, there was also a negative relationship between *VC-backed* and *work* (-0.290; $p < 0.1$). At the crisis level, our results showed that *risk* was positively related to *money* (0.600; $p < 0.01$) and *negative emotions* (0.776; $p < 0.01$). In contrast, negative associations between *risk* and *authentic* (-5.571; $p < 0.01$), *tone* (-11.364; $p < 0.01$), and *positive emotions* (-0.659; $p < 0.01$) were shown.

At the entrepreneur level, we found that the variable *gender* was positively associated with *clout* (5.683; $p < 0.01$), *tone* (4.286; $p < 0.01$), and *positive emotions* (0.917; $p < 0.01$). Negatively, *gender* was related to *analytic* (-3.686; $p < 0.05$) and *money* (-0.338; $p < 0.01$). At the Twitter level, our results indicated a positive association between *work* and the number of words used (0.463; $p < 0.05$) and a negative association regarding *clout* (-2.756; $p < 0.1$) and *positive emotions* (-1.531; $p < 0.01$). In terms of the number of tweets, there was a positive association with *positive emotions* (1.199; $p < 0.01$) and a negative association with *work* (-0.811; $p < 0.01$). Table 4-5 shows the individual results.

Table 4-5: Between-effects model

	Dependent variable							
	Analytic	Clout	Authentic	Tone	Positive emotions	Negative emotions	Work	Money
Constant	82.054***	85.931***	43.757***	93.301***	11.156***	0.814***	4.461***	1.675***
	(5.305)	(4.542)	(5.917)	(5.904)	(0.645)	(0.260)	(0.737)	(0.457)
Twitter level control								
log(Tweets)	-1.933	0.639	1.837	2.297	1.199***	0.089	-0.811***	0.007
	(1.641)	(1.405)	(1.830)	(1.826)	(0.199)	(0.080)	(0.228)	(0.141)
log(WC)	-0.165	-2.756*	-0.728	-2.528	-1.531***	-0.020	0.463**	-0.034
	(1.652)	(1.414)	(1.843)	(1.839)	(0.201)	(0.081)	(0.230)	(0.142)
Entrepreneur level control								
Gender	-3.686**	5.683***	-0.973	4.286***	0.917***	-0.094	-0.009	-0.338***
	(1.447)	(1.239)	(1.614)	(1.610)	(0.176)	(0.071)	(0.201)	(0.125)
Habitual	1.255	0.053	1.451	-0.616	-0.093	-0.034	0.035	-0.001
	(1.112)	(0.952)	(1.241)	(1.238)	(0.135)	(0.055)	(0.155)	(0.096)
Crisis level control								
Risk	-0.147	-1.270	-5.571***	-11.364***	-0.659***	0.776***	0.110	0.600***
	(1.262)	(1.081)	(1.408)	(1.405)	(0.153)	(0.062)	(0.175)	(0.109)
Independent variable								
VC-backed	0.354	0.085	-1.403	3.353**	0.207	-0.143**	-0.290*	-0.048
	(1.182)	(1.012)	(1.319)	(1.316)	(0.144)	(0.058)	(0.164)	(0.102)
Observations	780	780	780	780	780	780	780	780
R^2	0.039	0.061	0.028	0.102	0.153	0.197	0.048	0.050
Adjusted R^2	0.031	0.054	0.020	0.095	0.146	0.190	0.041	0.042
F Statistic (df = 6; 773)	5.204***	8.359***	3.716***	14.691***	23.206***	31.529***	6.506***	6.747***
Note:								$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

4.4.4 Robustness checks

To test the findings from the between-effects analysis, we conducted further analysis to check robustness using our panel dataset. Tables 4-6 and 4-7 provide an overview of all used variables with the corresponding analysis. For the pooled OLS regression model, our results showed that emotional *tone* represented a relationship with *VC-backed* (3.370; $p < 0.01$). Similarly, *positive* as well as *negative emotions* (positive: 0.211; $p < 0.1$; negative: -0.143; $p < 0.01$) were related to entrepreneurs funded by VC. The random-effects model for emotional *tone* also showed a relationship with *VC-backed* entrepreneurs, confirming the robustness of the previous analysis. For emotional *tone*, we obtained the value 3.384 ($p < 0.05$), and for *negative emotions*, we obtained the value -0.143 ($p < 0.05$). For *positive emotions*, on the other hand, we did not establish a relationship with VC backing. In our third analysis, we tested a fixed-effects model that controlled for time-fixed effects. Here, too, the previous findings on emotional values were confirmed in their robustness, as indicated by emotional *tone* at 3.376 ($p < 0.01$) and *positive emotions* at 0.212 ($p < 0.1$). Regarding the *negative emotions*, as before, we obtained a negative relationship of -0.143 ($p < 0.01$).

Table 4-6: Robustness-check

	Analytic			Clout			Authentic			Tone		
	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time
Constant	80.367***	78.203***		81.719***	77.392***		45.016***	45.776***		95.982***	97.833***	
	(3.822)	(3.961)		(3.405)	(3.615)		(4.653)	(4.952)		(4.623)	(4.927)	
Twitter level control												
log(Tweets)	-2.007*	-2.025	-2.119*	0.211	-0.249	0.176	2.454*	2.823*	2.394*	3.922***	5.030***	3.712***
	(1.190)	(1.240)	(1.190)	(1.060)	(1.131)	(1.061)	(1.448)	(1.547)	(1.450)	(1.439)	(1.539)	(1.437)
log(WC)	0.174	0.547	0.316	-1.884*	-0.965	-1.840*	-1.345	-1.696	-1.269	-3.960***	-4.904***	-3.694**
	(1.189)	(1.229)	(1.190)	(1.059)	(1.123)	(1.061)	(1.447)	(1.539)	(1.450)	(1.438)	(1.531)	(1.437)
Entrepreneur level control												
Gender	-3.785***	-3.902***	-3.793***	5.577***	5.460***	5.575***	-0.910	-0.891	-0.914	4.327***	4.318***	4.312***
	(1.150)	(1.441)	(1.149)	(1.024)	(1.239)	(1.025)	(1.400)	(1.608)	(1.400)	(1.391)	(1.609)	(1.387)
Habitual	1.229	1.196	1.227	0.018	-0.018	0.018	1.454	1.452	1.453	-0.633	-0.651	-0.637
	(0.886)	(1.112)	(0.885)	(0.789)	(0.956)	(0.789)	(1.078)	(1.240)	(1.078)	(1.071)	(1.241)	(1.069)
Crisis level control												
Risk	-0.481	-0.699	-0.469	-0.934	-0.708	-0.930	-4.673***	-4.342***	-4.667***	-10.020***	-9.509***	-9.998***
	(0.757)	(0.647)	(0.756)	(0.674)	(0.619)	(0.674)	(0.921)	(0.893)	(0.921)	(0.915)	(0.883)	(0.913)
Independent variable												
VC-backed	0.377	0.408	0.380	0.127	0.170	0.128	-1.402	-1.400	-1.400	3.370***	3.384**	3.376***
	(0.942)	(1.182)	(0.941)	(0.839)	(1.016)	(0.839)	(1.146)	(1.318)	(1.146)	(1.139)	(1.319)	(1.136)
Observations	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560
R^2	0.030	0.020	0.030	0.038	0.022	0.038	0.023	0.021	0.023	0.090	0.085	0.089
Adjusted R^2	0.027	0.017	0.026	0.035	0.018	0.034	0.019	0.017	0.019	0.086	0.081	0.085
F Statistic	8.143*** (df = 6; 1553)	32.482***	8.014*** (df = 6; 1552)	10.357*** (df = 6; 1553)	35.137***	10.258*** (df = 6; 1552)	6.107*** (df = 6; 1553)	33.482***	6.100*** (df = 6; 1552)	25.498*** (df = 6; 1553)	143.812***	25.294*** (df = 6; 1552)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4-7: Robustness-check

	Positive emotions			Negative emotions			Work			Money		
	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time	Pooled OLS	Random-Effects	Fixed-Effects Time
Constant	11.310***	11.443***		0.849***	0.869***		4.319***	4.169***		1.850***	2.018***	
	(0.497)	(0.530)		(0.211)	(0.223)		(0.539)	(0.565)		(0.349)	(0.372)	
Twitter level control												
log(Tweets)	1.369***	1.507***	1.342***	0.085	0.085	0.091	-0.789***	-0.751***	-0.798***	0.012	0.027	0.009
	(0.155)	(0.166)	(0.154)	(0.066)	(0.070)	(0.066)	(0.168)	(0.177)	(0.168)	(0.109)	(0.116)	(0.109)
log(WC)	-1.658***	-1.759***	-1.624***	-0.017	-0.019	-0.025	0.477***	0.482***	0.488***	-0.053	-0.081	-0.049
	(0.155)	(0.165)	(0.154)	(0.066)	(0.069)	(0.066)	(0.168)	(0.175)	(0.168)	(0.109)	(0.116)	(0.109)
Entrepreneur level control												
Gender	0.914***	0.907***	0.912***	-0.098	-0.099	-0.097	-0.022	-0.036	-0.023	-0.343***	-0.344***	-0.343***
	(0.150)	(0.176)	(0.149)	(0.064)	(0.071)	(0.063)	(0.162)	(0.200)	(0.162)	(0.105)	(0.124)	(0.105)
Habitual	-0.097	-0.101	-0.097	-0.035	-0.035	-0.034	0.031	0.027	0.031	-0.001	-0.001	-0.001
	(0.115)	(0.136)	(0.115)	(0.049)	(0.055)	(0.049)	(0.125)	(0.155)	(0.125)	(0.081)	(0.096)	(0.081)
Crisis level control												
Risk	-0.544***	-0.495***	-0.541***	0.707***	0.688***	0.706***	0.074	0.052	0.075	0.465***	0.399***	0.465***
	(0.098)	(0.094)	(0.098)	(0.042)	(0.041)	(0.042)	(0.107)	(0.094)	(0.107)	(0.069)	(0.065)	(0.069)
Independent variable												
VC-backed	0.211*	0.214	0.212*	-0.143***	-0.143**	-0.143***	-0.287**	-0.283*	-0.287**	-0.050	-0.051	-0.049
	(0.122)	(0.144)	(0.122)	(0.052)	(0.058)	(0.052)	(0.133)	(0.164)	(0.133)	(0.086)	(0.102)	(0.086)
Observations	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560	1,560
R^2	0.126	0.111	0.123	0.175	0.168	0.174	0.038	0.028	0.038	0.037	0.031	0.037
Adjusted R^2	0.122	0.107	0.119	0.171	0.165	0.170	0.034	0.024	0.034	0.033	0.027	0.033
F Statistic	37.261*** (df = 6; 1553)	193.619***	36.266*** (df = 6; 1552)	54.718*** (df = 6; 1553)	313.171***	54.546*** (df = 6; 1552)	10.241*** (df = 6; 1553)	44.054***	10.211*** (df = 6; 1552)	9.943*** (df = 6; 1553)	49.001***	9.943*** (df = 6; 1552)

Note: *p<0.1; **p<0.05; ***p<0.01

4.5 Discussion

4.5.1 Key findings and contributions

Although entrepreneurs' online presence is a rising aspect of entrepreneurial communication (Chen et al., 2017; Fischer & Reuber, 2014; Olanrewaju et al., 2020; Yang & Berger, 2017), little is known about how it is affected by a crisis. Therefore, the intention of our study was to explore the impact of a crisis on entrepreneurs' communication. To this end, we subsequently discuss the economic and psychological constructs that emerged in Twitter communication before and during the first wave of the COVID-19 pandemic. Before going into detail, however, we discuss the results in the context of the proposition in section 4.2. Across all concepts studied, we found that entrepreneurs increased their activity on social networks during the crisis and communicated with their audiences there. This showed that entrepreneurs generally changed their communication behavior and adapted it based on the situation. Voice tone negatively changed (*lower emotional tone; higher negative emotions*), and the economic consequences of the crisis were also reflected in the content of the communication (*lower work*). In addition, we found that the type of entrepreneur, in our case, *VC-backed* entrepreneurs, influenced how communication took place during the crisis (*stable expressed emotions*). In summary, the content of our proposition was reflected in the results of the study.

In detail, a key result of the psychological analysis suggested that a crisis negatively affects emotions within the communication. Before the pandemic, the words used in the tweets of entrepreneurs were more positive than during the first wave of the pandemic. Specifically, our analysis showed that working with a VC affected emotional tone in that such entrepreneurs communicated less negatively than their peers without VC investor relationships. Before the pandemic, VC-backed entrepreneurs expressed more positive and fewer negative emotions. And in-pandemic, they are still more emotional and less positive, but not strongly negative either. One interpretation of these results is that these investors may have experienced a previous crisis either as founders or investors (e.g., the 2008 financial crisis). Thus, perhaps they are able to pass on this experience to the entrepreneurs in their portfolio companies. Furthermore, these results indicated that VC-backed entrepreneurs might have less fear regarding the survival of their startups due to their preexisting financing compared to entrepreneurs without such external capital. Other revenue streams were also limited during the COVID-19 pandemic (e.g., revenue from sales), which could have negatively impacted the communication of unfunded entrepreneurs. Due to the fact that entrepreneurs received less partner support during the crisis, the negative tone in communication could also be understood as a signal to obtain support via the community on Twitter. When these findings are combined with the existing literature, even more interpretations emerge. A possible explanation for this in the context of the crisis was indicated by Gompers et al. (2020a), whose study suggested that VC portfolio companies are less negatively affected by exogenous shocks and also benefit from more intensive collaboration with investors by spending more time together. Moreover, research has shown that VCs add value to and professionalize their portfolio companies (Hellmann & Puri, 2002; Rosenbusch et al., 2013). Therefore, these results might suggest that VC-backed entrepreneurs adopt a more professional form of communication during an exogenous shock and therefore adopt more positive forms of self-presentation to impress their external audiences. While VC-backed entrepreneurs cannot completely escape exogenous shock either, they continue to communicate professionally through their emotional tone. Belitski et al. (2022) referred to the resilience that is generated by crises and strengthened in some actors. Moreover, this explains why our results suggested potential differences in mentality between VC-backed and unfunded entrepreneurs.

The results reflecting economic perspectives showed that the concept of work was influenced by the crisis. Entrepreneurs talked more about work before than during the first COVID-19 wave. One possible explanation is the challenge of dealing with the new situation (i.e., the crisis). For all actors, the priority was to seek answers to questions posed by the exogenous shock. Accordingly, entrepreneurs may have focused primarily on coping with the immediate issues rather than talking about the broader topic of work. Alternatively, at the time, the entrepreneurs did not yet know the specific consequences of the crisis for their startups and, accordingly, spoke less about work owing to the uncertain nature of the future. Among those who were VC backed, however, we identified a negative association with the concept of work. Obschonka et al. (2017) showed that various groups differed in terms of their expressed work ethic (e.g., "workhorse"), meaning that the "workhorses" spoke less about leisure time and more about work activities. Therefore, our results suggested that VC-backed entrepreneurs were less likely to present themselves as workhorses than entrepreneurs without financing. This could be an indication that entrepreneurs without investors sought to convey their proficiency to their target audiences. Against the backdrop of reduced access to financial resources, these results may suggest that entrepreneurs sent signals to investors during times of crisis to encourage investment. This may ultimately suggest that unfunded entrepreneurs use digital communities such as Twitter more extensively during a crisis to promote themselves. The fact that entrepreneurs without a VC relationship, in particular, communicated more work-related content could also indicate the possible failure of their startups. In the context of failure, Fisch and Block (2021) interpreted increased communication about work as a signal for employment search. Since some entrepreneurs must close their startups during crises (Belitski et al., 2022), increased communication about work could indicate that these entrepreneurs are in a fatal financial situation, possibly leading to failure and the entrepreneurs seeking other job options. Furthermore, the pandemic has meant that work no longer has to be done exclusively from a physical office (Kraus et al., 2020), with remote work becoming the norm. Since communication also revealed the extent to which people had work-life balance (Tata et al., 2017), our results indicated that VC-backed entrepreneurs were better able to manage the work challenges associated with the COVID-19 pandemic and to separate their private and business lives.

The findings above point toward potential fields of action for practice and policy. From the perspective of the entrepreneurs, role models should be identified whose communication serves as a point of orientation. VC-backed entrepreneurs were less emotional in their communication, indicating the positive influence of this relationship. Therefore, role models (e.g., VC-backed entrepreneurs) could help others adapt their communication styles and accordingly adjust their expressed emotions within their communication styles. Because in times of crisis, entrepreneurs who have not yet received funding should position themselves well, especially on platforms experiencing increased usage. Role models can thus assume an orientation function during an exogenous shock and reduce uncertainty about how to present oneself on social media. Furthermore, the VC investor, in our case, could act as a mentor and a navigator through the phase of an exogenous shock. Therefore, it could help entrepreneurs to search generally for mentors during such a situation who support them emotionally. While we have already explained in Section 2 that social networks, in general, have gained prominence during COVID-19, our analysis also suggested that entrepreneurs have spent more time on Twitter. Moreover, entrepreneurs have also benefitted from experience and exchange with other entrepreneurs, indicating that entrepreneurs should not only actively seek support on these platforms but also support others. Furthermore, entrepreneurs should be aware that their stakeholders are also active on social networks and perceive the communicated sentiment of entrepreneurs. Each tweet contributes to the image of an entrepreneur, and for this reason, tweets should be carefully worded. Quality signals can also be sent via social networks to activate investors' interest. Therefore, entrepreneurs who have not yet received funding could use a crisis to present their entrepreneurial qualities well.

Although increased financial uncertainty is evident (Block & Sandner, 2009; Brown & Rocha, 2020; Brown et al., 2020), there are policy programs available to aid companies in mitigating the impact of the crisis (Bailey et al., 2020). Accordingly, policymakers should account for entrepreneurs attempting to establish ventures without access to either the financial or social capital that investors can provide, as well as whose ventures would particularly benefit from financial support or mentoring, for example. Such support might require establishing independent funds dedicated to supporting entrepreneurs who have not yet received external funding or connecting entrepreneurs with external partners with whom they can discuss crisis management (e.g., through a mentoring program). For the latter, policymakers could organize a matching program with experienced investors to act as mentors to navigate entrepreneurs through uncertain times. Furthermore, such a lack of support (Meurer et al., 2022) opens up further areas for action. In this way, policymakers could also bring together different actors from the entrepreneurial ecosystem to allow new relationships to emerge that could enable joint crisis management. A summary of our key findings and the implications for entrepreneurs and policymakers derived from them are provided in Table 4-8.

Table 4-8: Key findings and implications for entrepreneurial practice and policymaking

Communication dimensions and challenges for practice	Key findings	Implications for entrepreneurs	Implications for policy makers
Psychological: Entrepreneurs experience reduced emotional support in crises, and classic relationship mechanisms are impaired.	• Overall, entrepreneurs communicated more emotionally during the first wave of the crisis. • Entrepreneurial communication was characterized by a higher number of negative words in communications. • VC-backed entrepreneurs show better control over their emotions than entrepreneurs who did not have an investor relationship.	• Search for role models and learn from them ("How to communicate best in times of crises"). • Use other platforms (e.g., social networks) to gain emotional support when traditional relationship and communication mechanisms no longer work. • Create awareness that stakeholders are also on social networks and perceive the sentiments communicated there. • Get involved in one's network to offer support to other entrepreneurs who need help and to share one's knowledge.	• Support unbacked entrepreneurs with mentoring offers and coaching sessions and communicate these activities in the entrepreneurial ecosystem (e.g., advice on financing in the crisis). • Create and coordinate community meetings, allowing entrepreneurs and stakeholders to network and maintain relationships even during a crisis. • Create programs that show entrepreneurs strategies for optimal crisis management and communication.
Economic: A crisis changes the economic environment in that revenues are missing and resource providers, like investors, have different investment behaviors.	• Overall, entrepreneurs talked less about their work during the first wave of the crisis. • Unfunded entrepreneurs presented themselves in-pandemic as workhorses. • Working with a VC suggested that entrepreneurs spoke less about work than when entrepreneurs did not have investor relationships.	• Activate one's network and actively communicate regarding missing resources. • Adapt one's communication style to signal one's personal and startup qualities to relevant resource providers (e.g., investors). • Communicate during the crisis so that stakeholders (e.g., customers, investors) are informed even during this difficult time.	• Offer funding opportunities for entrepreneurs who do not have access to risk capital or other financing resource providers. • Connect venture capitalists with entrepreneurs seeking access to capital during a crisis.

4.5.2 Limitations and future research directions

Our study explored communication before and during a crisis and how the changed context altered the communication behaviors of entrepreneurs. The study's limitations open up some paths for valuable future research. First, our results look at the communication of a specific actor in the entrepreneurial ecosystem—the entrepreneur. Thus, the results showed only a part of this ecosystem. However, since other actors are also affected by the crisis (e.g., investors, entrepreneurship educators, and innovation managers), this opens up another avenue of research as these individuals also use online communication to exchange information (Moritz et al., 2015).

Second, it is important to note that entrepreneurs and startups face different challenges than colleagues from large and established organizations, which is why managers or professional CEOs might react differently in crises than entrepreneurs. For this reason, we recommend future studies compare communications between entrepreneurs and other actors (e.g., Obschonka et al., 2017) by examining crisis communications between entrepreneurs and managers. Third, we used the COVID-19 pandemic as the context of our study, so the results are not necessarily generally applicable to other crises. While this crisis is a global event, local crisis events also exist that may yield different results. Therefore, we recommend that future studies examine communication in the context of other crisis events to further complete the picture of entrepreneurial communication during crises. Fourth, we interpreted our results in particular against the background of a crisis. Accordingly, these results could also be tested in a more general context in further studies. For example, we show that VC-backed entrepreneurs spoke less emotionally than entrepreneurs without investors. Therefore, future studies could examine the extent to which VC backing influences the emotionality of entrepreneurs in general.

4.6 Conclusion

Entrepreneurial communication has been investigated in previous studies that have identified various strategies used by entrepreneurs to maintain their images with their audiences and to maintain relationships. We have contributed to this research stream by investigating how communication changed as a result of a crisis context. Our study showed that a crisis is an emotional event, and entrepreneurs speak more emotionally during a crisis than during the period preceding that crisis. In particular, entrepreneurs showed their negative emotions through their online communications. Furthermore, we found that entrepreneurs without existing investor relationships spoke more about work. Finally, this study represents only a first step in the understanding of entrepreneurial crisis communication; there is ample room for further research.

5. Study 4 – Emotions and entrepreneurial finance: Analysis of venture capitalists' and business angels' emotions with digital footprints from Twitter

Authors: Manuel Kaiser and Andreas Kuckertz[8]

Abstract

Emotions are a central concept in previous entrepreneurship research, but this is mainly related to entrepreneurs and their entrepreneurial journey. However, venture capitalists and business angels, two critical investors in the entrepreneurial finance literature, are essential actors in the entrepreneurial process. Still, little is known about investor emotions in this context. Therefore, in this study, we ask how venture capitalists differ from business angels regarding their expressed emotions. To this end, we use an increasingly familiar research approach by examining the digital footprints of these investors on Twitter. For this purpose, we identify 822 investors from Crunchbase and analyze their 994,969 Tweets with Linguistic Inquiry and Word Count (LIWC) as a text analysis tool. Our results show that venture capitalists display their positive emotions on Twitter more than angel investors, meaning venture capitalists have higher scores in emotional tone. Furthermore, our results indicate a better emotional control of venture capitalists, as they communicate more positively overall.

Keywords: Business angel, computer-aided text analysis (CATA), emotions, entrepreneurial finance, venture capital, Twitter

[8] Status and reference: This study is currently under review.

5.1 Introduction

To ensure the survival and growth of their startup, acquiring external financial resources is a crucial challenge for entrepreneurs (Ferrati & Muffatto, 2021). This is because startups in the early stages of their life cycle lack the necessary revenues (Block et al., 2018), and entrepreneurs' own capital is limited (Ferrati & Muffatto, 2021). Given this circumstance, debt financing is usually not an option for entrepreneurs, who consequently turn to equity investors to finance their ventures (Block et al., 2018). Therefore, entrepreneurs must enter into partnerships with other stakeholders with these necessary resources willing to invest them in uncertain and risky scenarios.

In this finance situation, venture capitalists (VCs) and business angels (BAs), in particular, are essential and traditional partners who fill these funding gaps and bring financial and non-financial value to the table (Cohen & Wirtz, 2022; Fairchild, 2011). For the example of the USA, the rising importance of financial resources from external capital providers is also reflected in the National Venture Capital Association's 2020 annual report. In 2020, 164 billion dollars were invested in the US, an increase of 430 percent compared to 2007 (National Venture Capital Association, 2021). In Europe, the investment volume has also increased by 24 percent, from 80.8 billion in 2007 to 100.5 billion in 2020 (Invest Europe, 2022). With the financial support of these investors, entrepreneurs can recruit new employees, increase capacities for marketing activities (Huang & Knight 2017), and scale their ventures. Cooperation with these investors, therefore, makes an essential economic contribution to the establishment and development of innovative ventures (Gompers et al., 2020b).

Both investors, VCs and BAs, are part of the entrepreneurial process of innovative startups and therefore cooperate with entrepreneurs and startups operating in uncertain and risky contexts (Gompers et al., 2020b; Huang, 2018). These investors thus face agency risks resulting from information asymmetries between entrepreneur and investor (Cable & Shane, 1997). Due to this situation, the individual actors involved in the process are also influenced by their feelings and emotions (Cardon et al., 2012), which may influence their behavior (Baron, 2008; Jing et al., 2013). Emotions can play a role in finding opportunities, evaluating them, and ultimately deciding for or against opportunities (Cardon et al., 2012; Foo, 2011; Huang, 2018). Furthermore, emotions are part of relationship strategies after investment decisions and influence how partners react (Fili, 2014). Overall, emotions influence actions and provide the necessary stimuli for them (Goleman, 2012). And the emotional journey of entrepreneurship (Cardon et al., 2012), therefore, also includes investors with their individual emotions because they are often part of entrepreneurial processes.

While a large stream of research has already developed in the entrepreneurial finance studies on VCs and BAs (Drover et al. 2017; Ferrati und Muffatto 2021; Tenca et al. 2018), research on their emotions is less common. Most previous entrepreneurship studies on emotions focus primarily on entrepreneurs' emotions, illustrating how emotions and feelings influence the cognitive abilities of entrepreneurs and, thus also, the evaluation of opportunities (Baron, 2008; Cardon et al., 2012; Foo, 2011; Welpe et al., 2012). Though prior research already considers individual investors' traits and characteristics (Block et al., 2019; Franić & Drnovšek, 2019; Mitteness et al., 2012), surprisingly, we know little about VCs' and BAs' emotions.

From an entrepreneurial finance perspective, however, understanding investor emotions is essential for three reasons. First, emotions influence the evaluation of information; thus, they are also part of individual cognitive processes (Triberti et al., 2017). This means that emotions influence how risk and information are evaluated and decisions are made (Han et al., 2007). As a result, decision behavior in the context of uncertainty is also emotionally influenced (Prietzel, 2020). Consequently, a deeper understanding of VCs' and BAs' emotions would help research on VCs' and BAs' investment behavior (Cohen & Wirtz, 2022; Ferrati & Muffatto, 2021; Silva, 2004) to further complete this big picture because, ultimately, emotions are an "impulse to act" (Goleman, 2012, p. 6).

Second, after the investors have given their emotional commitment to invest (Wallnöfer & Hacklin, 2013), their emotions are also relevant in the post-investment phase. For example, Fili (2014) shows that investors use different emotional strategies in their post-investment relationships with entrepreneurs. From a process perspective, emotions are thus of great importance for both the pre- and post-investment phases to understand the relationships in different facets. This would open up new practical and theoretical implications for investor relations literature on these investors (Sapienza & Korsgaard, 1996; Wallnöfer & Hacklin, 2013).

Third and overall, emotions are an essential research stream for understanding personality. Psychological analyses show that personality and emotions are closely linked, which means that personality also influences emotion control (Morawetz et al., 2017). Thus, emotions are also present in expressions of the Big Five personality traits, such as neuroticism (Obschonka et al., 2017), which recent studies of investor personality also examined (Block et al., 2019).

Since the entrepreneurial finance landscape is becoming increasingly heterogeneous and entrepreneurs need to build relationships with different players (Block et al., 2018; Bonini

& Capizzi, 2019), we focus on VCs and BAs, who are at the center of financing opportunities for startups (Hellmann et al., 2019). Furthermore, earlier studies have often contrasted these two traditional capital providers (Cohen & Wirtz, 2022; Fairchild, 2011; Hellmann et al., 2019; van Osnabrugge, 2000). From this previous research, we know that VCs and BAs differ regarding where their financial resources come from (De Clercq et al., 2006; Drover et al., 2017). VCs are associated with a VC organization, for example, as a partner or employee, where they manage funds provided by limited partners to invest in new and innovative business models (De Clercq et al., 2006; Gompers & Lerner, 2000). Accordingly, VCs invest their funds on behalf of others and represent the VC organization with their stakeholders.

In contrast, BAs are private investors investing their private financial resources (Drover et al. 2017). Moreover, BAs are primarily responsible to themselves and not to a third party in the negative case of a startup's failure and a loss of investment. In sum, the critical difference between VCs and BAss is that VCs invest with the background of belonging to a VC organization, and BAs as private individuals (Bonini & Capizzi, 2019).

Since previous research shows that individuals' communication signals emotions (Tata et al., 2017), the key difference between VCs and BAs also suggests different behavior in signaling emotions because of their different roles (professional role vs. private role). In his seminal work on the social relevance of roles, Goffman (1959) explains that individuals take on different social roles depending on circumstances and fulfill the expectations of others concerning those roles, which is why people behave differently depending on their roles. In a similar vein, VCs and BAs take on different roles. For this reason, we investigate the expressed emotions of these two investor types with the following research question:

How do the expressed emotions of VCs differ from BAs?

To find an answer to our research question, we operationalize the emotions of VCs and BAs with the support of Linguistic Inquiry and Word Count (LIWC) software, a digital tool for text analysis (Pennebaker et al., 2015). The data for the analysis with LIWC represents the Twitter communication (Tweets) of 822 investors, allowing us to analyze 994,969 Tweets.

Through this study, we contribute to several research streams. First, we contribute to the overall emotion research in entrepreneurship (Baron, 2008; Cardon et al., 2012; Foo, 2011; Tata et al., 2017; Welpe et al., 2012) by empirically studying the expressed emotions of two critical investors in the entrepreneurial process. Previous research on emotions largely overlooks investors, as the previous focus was on entrepreneurs and their emotions. With our study, we are thus also bringing investor emotions into the discussion. In this vein, we also address the general requirement from prior research to include emotional aspects in entrepreneurship research (Mitchell et al. 2007).

Second, regarding the entrepreneurial finance literature, we contribute to research on VCs (e.g., Gompers & Lerner 2001; Gompers et al. 2020b) and BAs (e.g., Maxwell et al. 2011; Paul et al. 2007) by analyzing and comparing the emotions of these investors. Although we already have some insights into the individual characteristics of VCs and BAs, such as financial or collaborative (De Clercq et al., 2006), research on personal characteristics further helps to complete the big picture of investors (Smith & Bergman 2020). Therefore, as we contrast and compare the emotions of two key investors, this study also shows differences between VCs and BAs and expands this research stream (Chemmanur & Chen, 2014; Cohen & Wirtz, 2022; Fairchild, 2011). Consequently, we support research on the black box of investor psychology in the context of VC and BA research.

Third, we contribute methodically to the growing research stream of big data social media analysis within entrepreneurship (Block et al., 2019; Fisch & Block, 2021; Obschonka et al., 2017; Tata et al., 2017; Winkler et al., 2020) by using investors' digital footprints to investigate their emotions. While traditionally, researchers primarily use self-assessment of individuals to analyze personality characteristics, social media data opens up new opportunities and insights (Block et al. 2018; Obschonka, Fisch, & Boyd 2017). Moreover, Block et al. (2018) point to the challenge of reaching target groups like those in our study for scientific purposes in other empirical settings. For this reason, we are using Crunchbase and LIWC to break novel ground in data acquisition to address this challenge.

The remainder of this paper is structured as follows. Section 5.2 explains the conceptual background of emotions and the differences between VCs and BAs and develops our hypotheses. Section 5.3 is devoted to the study's methodological approach and explains the data collection process. The analysis of the digital footprints takes place in section 5.4. Section 5.5 explains the key findings of the study. Finally, this study ends with section 5.6 and some concluding remarks.

5.2 Conceptual Background – emotions in the context of entrepreneurial finance research

5.2.1 Emotions and entrepreneurial finance

Research on emotions is primarily anchored in psychology (Barrett et al., 2007; Ekman, 1992), but has recently been a growing topic of discussion in entrepreneurship research as well (Baron, 2008; Cardon et al., 2012; Tata et al., 2017). Emotions are an overarching concept that explains feelings and moods (Cardon et al., 2012; Williamson et al., 2022a). The literature divided emotions into two categories, trait emotion, and state emotion. While emotion traits describe how individuals tend to exhibit certain emotional expressions, state emotions follow events and describe the emotion situationally (Foo, 2011). Furthermore, emotions can be distinguished according to their valence, between positive and negative (Lerner & Keltner, 2000). Here, Tata et al. (2017) refer to the independence of both valences and the dominance that negative emotions can have so that they override positive ones. We build on this knowledge and use the distinction between positive and negative emotions as the basis for our study. With this, we also shed light on which emotional propensity VCs and BAs express in their emotions (positive or negative tone).

While entrepreneurial finance research uses various concepts to explain investors and their startup relationships, it appears that emotion is an overarching concept here, but one that is linked to various other concepts. It takes place in evaluation decisions and is part of cognitive processes. Thus although a variety of investor evaluation criteria are available (Ferrati & Muffatto, 2021), Huang (2018) describes the decision situation as complex due to the resulting equally diverse possibilities for analyzing an investment (e.g., economic, market). Consequently, the analysis and evaluation of investments require analytical and cognitive abilities on the part of investors. These cognitive processes, in turn, are influenced by the emotions of the respective person (Seo & Barrett, 2007). Above that, decision-making processes and investor relationships are linked to trust (Middelhoff et al., 2014; Schwarzkopf et al., 2010; Shepherd & Zacharakis, 2001), which include emotions as a component (Middelhoff et al., 2014). Moreover, in the theoretical background of emotion research, trust is considered an emotion (Plutchnik, 1980). Furthermore, investors communicate with their entrepreneurs' (Middelhoff et al., 2014; Shepherd & Zacharakis, 2001) and emotions are, in turn, expressed through communication. Finally, emotions also appear in investors' personalities and illustrate how neurotic they might be (Block et al., 2019). In sum, these examples show the importance and the cross-sectional function of emotions for understanding investors and their behavior.

At the intersection of finance and psychology issues, emotions are especially discussed as an influencing factor when considering decision-making processes or investors' behavior (Chun et al., 2021; Jing et al., 2013; Lerner & Keltner, 2000). However, in the context of entrepreneurial finance, the evidence is so far sparse regarding investors' emotions. Jing et al. (2013) examine emotions in VC investment decisions from the perspective of a double-sided moral hazard relationship. Their study shows that negativity can also have a negative impact on the VC's decision-making behavior. Further studies in the context of angel investments are from Huang and Pearce (2015) and Huang (2018). Both studies examine gut feelings and their influence on business angel investment behavior. The findings of Huang and Pearce (2015) indicate that angel investors use a combination of intuition and analysis to decide what shows that feelings (intuition) influence their behavior. Huang (2018) developed a model to provide an overarching concept for the gut feel of BAs. In this context, these results also indicate that investors adopt different attitudes toward risk. Another study on gut feeling of investors came from Levie and Gimmon (2008) and also shows that, in addition to rational reasons, emotions play a role in their decisions. Against the background of relationship management between entrepreneur and investor, Fili (2014) analyzes the negotiation strategies of investors. Different emotions are addressed by distinguishing between two strategies (good cop vs. bad cop). In this context, the results indicate that the emotion trust is an important prerequisite for investors acting as good cops and therefore influences the choice of psychological behaviors (Fili, 2014). In sum, we find that little research captures investor emotions and that existing knowledge tends to focus mostly on BAs while neglecting other important investors, such as VCs.

Research goals of previous studies on VCs and BAs have been to compare these two investors to uncover differences between these investor types. In doing so, these studies examine differences in the screening of business plans (Mason & Stark, 2004), different decision and investment behaviors (Cohen & Wirtz, 2022; van Osnabrugge, 2000), the decision criteria (Granz et al., 2020), and also in relationship contracts (Chemmanur & Chen, 2014). So we know to what extent these two investor types can differ in economic factors and behavior (De Clercq et al., 2006; Fairchild, 2011). What little is known about, however, are the personal characteristics of VCs and BAs, especially in comparison. Therefore, we examine VCs and BAs regarding their emotions and how they differ. Nevertheless, previous findings on VCs and BAs suggest that there are also emotional differences, which we argue for below in the hypothesis development.

5.2.2 Hypothesis development

The investor types VC and BA are two widely used capital providers for young innovative companies, which have already met with a broad interest in research in the past (Drover et al. 2017; Ferrati und Muffatto 2021). In addition, both investor types have shown in practice that they greatly contribute to building innovative companies, such as Facebook or Dropbox. Even though VCs and BAs support startups, there are key differences between them, their investment behavior and their involvement. Therefore, due to these characteristic differences, we expect differences in their expressed emotions, especially in the expression of positive and negative emotions.

While BAs are individuals who contribute their private assets to the startup (Drover et al. 2017), VCs are professional investors who draw on a fund raised by limited partners (Kollmann et al., 2014). Accordingly, BAs invest their own funds while VCs manage the capital of others (e.g., universities and pension funds). BAs include, for instance, former entrepreneurs, wealthy celebrities, or experienced managers from established companies, which is where their financial resources come from (Block et al., 2019; De Clercq et al., 2006; Drover et al., 2017). For VC investors, this means that in addition to the entrepreneurs of their portfolio companies, they have other stakeholders in the form of limited partners whose interests they must take into account (Kollmann et al., 2014). In recent years, the opportunities for startup financing have become more diverse due to the emergence of new resource providers (Block et al., 2018; Bonini & Capizzi, 2019; Drover et al., 2017), which also makes it difficult to characterize investment volumes of traditional investors such as VCs and BAs as these have also evolved. Nevertheless, the literature suggests differences in investment volume between both types. While VCs typically invest sums averaging more than one million Dollars (De Clercq et al., 2006; National Venture Capital Association, 2021), the typical investment size of BAs is smaller with 50 – 100K Dollars (De Clercq et al., 2006). Both types of investors also differ in the investment phase, as BAs invest in the early stage (De Clercq et al. 2006) in particular, and VCs tend to invest between the middle and late stages (National Venture Capital Association 2021).

Besides these financial differences, VCs and BAs can also be distinguished in terms of collaboration. In the contractual form of the relationship, angel investors show themselves to be less formal, just as in the performance of due diligence (Drover et al., 2017). BAs rely more on soft control than VCs, which are stricter in implementing control mechanisms (Bonini & Capizzi, 2019). Moreover, the drive of an angel investor is, besides the growth potential of a startup, also the mentoring aspect in the relationship with the entrepreneur (De Clercq et al., 2006). Since both angel investors and VCs bring further value to the relationship (e.g., network, marketing know-how), entrepreneurs also benefit from them (De Clercq et al., 2006; Rosenbusch et al., 2013). However, Fairchild (2011) argues that these capabilities are more pronounced among VCs. In contrast, the relationship between BAs and entrepreneurs shows stronger empathy, in contrast to VC relationships (Fairchild, 2011).

In summary, these results show that VCs and BAs differ on diverse criteria (De Clercq et al., 2006; Drover et al., 2017; Fairchild, 2011), so we expect this will also be evident through the communication of their emotions. Since emotions can be expressed through words towards others (Tata et al., 2017; Williamson et al., 2022b), the literature on different roles and settings with different communication styles provides a possible explanation for this (Baldwin, 1992; Goffman, 1959; Sanchez-Burks et al., 2003). The findings of Hastings and Payne (2013) suggest that in the context of professional communication, equally professional emotion management is needed, which can be seen, for example, in the avoidance of signaling negative feelings. This suggests that communication that takes place professionally should contain fewer negative emotions. Furthermore, it is known that the setting in which communication takes place influences emotional behavior (Baldwin 1992). For example, the results of Sanchez-Burks et al. (2003) show that in-work communication differs from nonwork communication. Since VCs act on behalf of their VC organization and its stakeholders (e.g., limited partners) (De Clercq et al. 2006; Drover et al. 2017), professional communication is part of their job since they also represent their organization. As part of an organization, people are also brand ambassadors for it and influence its external perception (Dreher 2014). Moreover, BAs are ascribed to having an entrepreneurial background as a former entrepreneur, while VCs are employed managers in charge of a VC fund (De Clercq et al., 2006), which links to previous findings of Obschonka et al. (2017) and their entrepreneur-manager comparison. They find stronger expressions of entrepreneurs' negative emotions in contrast to managers'.

In his seminal book on *The presentation of self*, Goffman (1959) explains that people adapt their behavior, such as their communication, to the situation and the thereby associated social role to their person. Since other people are also involved in this situation and have expectations toward this role, people aim to fulfill the expectations of their role. However, the consequence of this is that although people aim to fulfill the expectations of the role, they are not necessarily themselves, e.g., authentic (Goffman, 1959). For the context of our study, this suggests that VCs belong to an organization (VC firm) they also represent, while BAs, as individuals, merely speak for themselves personally and therefore assume a different role. And because of this, VCs will tend to behave more professionally than BAs. In detail, we expect that the VC has professional emotion management with their VC organization in the background compared to the BA, who acts for personal reasons. Based on these considerations, we hypothesize that there is a difference between VCs and BAs in how they express their emotions:

Hypothesis: Investors who communicate more professionally with a higher degree of positive emotions are more likely to be venture capitalists than investors expressing more negative emotions.

5.3 Methods

5.3.1 Computerized emotion analysis with Twitter data

Today there are big data of text available that can be studied with the support of computers (Obschonka et al., 2017; Prüfer & Prüfer, 2020; Schwab & Zhang, 2019). This form of analysis is called computer-aided text analysis (CATA) and makes it possible for researchers to identify structures within the communication (Short et al., 2010). Therefore, CATA is suitable for analyzing concepts that are rather difficult to study in traditional approaches (Röhm et al., 2018), such as emotions in the context of the present research. Obschonka et al. (2017), for example, criticize that analysis of personal characteristics with traditional approaches has mainly occurred through the self-assessment of the individuals concerned (e.g., with questionnaires). With the support of CATA, it is possible to explore psychological aspects, such as positive and negative emotions, with the words that individuals use in a text (Pennebaker et al., 2015). Accordingly, CATA allows studying the expressed emotions of people through their own words (Pennebaker et al., 2015; Schwartz et al., 2013).

In psychology as well as in entrepreneurship, LIWC has proven to be a powerful tool for analyzing psychological concepts with CATA (Fisch & Block, 2021; Schwartz et al., 2013; Tata et al., 2017). LIWC is a closed dictionary developed by Tausczik and Pennebaker (2010) and contains overall 93 psychological concepts, including emotions. In particular, previous studies illustrate that LIWC is suitable for operationalizing positive and negative emotions because behind each of these concepts are dictionaries that make analysis possible (Tata et al., 2017). Furthermore, for an analysis to compare these two concepts, LIWC also offers a dictionary that shows the expression of the emotional tone in summary (Pennebaker et al. 2015).

As social networks encompass millions of users and produce large amounts of text daily, analyzing digital footprints with CATA has proven to be a fruitful source for exploring emotions. In this regard, Twitter, in particular, a microblogging service with a maximum of

280 characters, has emerged as a data source for research, as previous studies have shown (Block et al., 2019; Fisch & Block, 2021; Tata et al., 2017; Tumasjan et al., 2021; Winkler et al., 2020). On the one hand, entrepreneurs use this channel to maintain their business relationships (Fischer & Reuber, 2014), and on the other, startup investors are also an active part of the Twitter community (Block et al., 2019; Tumasjan et al., 2021). The latter shows that data from social networks can also provide insights into the personal characteristics of business angels and venture capitalists - areas that are otherwise difficult to investigate. Therefore, we build on this novel approach and use CATA with LIWC software to analyze investor emotions.

5.3.2 Data

The sample in this study is based on BAs and VCs identified by Crunchbase (Crunchbase, 2022). It provides comprehensive information on various individuals from the startup scene, such as entrepreneurs, BAs, and VCs (Block et al., 2019; Fisch & Block, 2021; Kuckertz, 2021). This information also includes links to the social media profiles of the investors (Block et al., 2019; Fisch & Block, 2021), as well as information on investment behavior (ter Wal et al., 2016). Therefore, this database contains all the relevant information necessary to create the sample for this study.

To identify BAs and VCs from Crunchbase, we relied on the *Crunchbase Hubs* for BAs and VCs. *Crunchbase Hubs* group organizations or people with similar characteristics (in our context, BAs and VCs) and provide information about these groups (e.g., social media profiles of the people) (Crunchbase, 2021). For our study, we used, on the one hand, the group *Angel Investors with Investments in the United States* with 638 BAs and, on the other hand, the group *Venture Capital Investors with Investments in United States* with 1,000 VCs. In this way, we identified and downloaded a total of 1,638 investors (638 BAs; 1,000 VCs) from the United States. Since only those with a social media profile on Twitter were relevant for our analysis, the sample was reduced to 872 people (162 BAs; 710 VCs). Twitter allows users to download the last 3,200 tweets of a timeline via its application programming interface (Obschonka & Fisch, 2018). Therefore, the last 3,200 tweets were downloaded from each of the 822 investors (677 VCs; 145 BAs) via R’s *rtweet* package in November 2021. The final sample was reduced from 872 to 822 investors because some Twitter profiles, for example, are not active and do not send tweets. After we excluded the re-tweets, we totally had a sample of 994,969 Tweets from 822 investors. With this dataset, we also cover a period of over 15 years of investor tweets from April 1, 2006 (the first tweet in our sample) to November 19, 2021 (the last tweet in our sample).

After downloading the 994,969 Tweets, we needed to clean up the words in this dataset to prepare it for analysis with LIWC. For example, person links were reduced from this sample so that the LIWC software could process the data, as well as website links (Obschonka et al., 2017).

5.3.3 Dependent variable (Investor type)

In a previous study, Obschonka et al. (2017) used Twitter for personality analysis and to be able to make a comparison between two groups (superstar manager vs. superstar entrepreneur). The authors use the two groups of people as the dependent variable in their study. We build on this and use our investor types as our dependent variable. Via the data obtained from Crunchbase, we are able to distinguish individuals by VC and BA. Therefore, we use a dummy variable to distinguish between VC (1) and BA (0). This allows us to preserve the emotional differences between these two investor types.

5.3.4 Independent variables (Emotions)

In our analysis, we want to investigate the expressed emotions used by VCs and BAs via their communication behavior on Twitter. To get the broadest possible overview of investor emotions, we use LIWC software version 1.6.0 and the core emotional concept it contains. LIWC clusters the 93 concepts into different categories, such as psychological processes, which include the affective processes that deal with emotional words (Pennebaker et al., 2015), which builds the context for our research. This software tool offers dictionaries to measure *positive* and *negative emotions* in a given text corpus. And to compare these concepts, LIWC also offers the summary dictionary *emotional tone*. The results of *emotional tone* show a value between 0 and 100 and calculate the emotional expression of the analyzed text. If a value is calculated that is above 50, the emotions expressed are positive. With a value under 50, the emotional tone is driven by negative emotions (LIWC, 2023). In this vein, the level of the value indicates how positively or negatively someone expresses emotions. In previous research, this concept has been seen as useful for analyzing emotions from Tweets (Fisch & Block, 2021). Against this background, the concept of *emotional tone* builds the independent variable for our study.

5.3.5 Control variables

Both the investment behavior of investors and their behavior on Twitter can influence the likelihood of investor types. Therefore, we use further data from Crunchbase and Twitter to control their influence.

First, we control for the gender of the investors, whether they are female (1) or male (0). We use it to take into account that the investor landscape is very heavily populated by male investors (Dempsey, 2021). Furthermore, previous research has shown that there are gender differences in the expression of emotions (Chaplin, 2015). Next, we control for whether the investors themselves have already started a business (1) or not (0). Previous findings highlight that BAs have often started a business themselves, which is where their financial resources originate from (De Clercq et al., 2006). In addition, we obtain information about the investment behavior of investors via Crunchbase. This data allows us to take into account that VCs and BAs differ in their investment activity (Fairchild, 2011). BAs tend to invest for personal reasons to mentor and VCs primarily with an exit goal, e.g., in the form of an initial public offering (IPO) (De Clercq et al., 2006). Therefore, we control for the number of IPOs (log1p) that an investor has made with their investments. Another control variable captures whether an investor is located in a VC hotspot (1) or outside these hotspots (0). Here we are guided by the three VC clusters from the study by Röhm et al. (2018), i.e., California with Silicon Valley, Massachusetts with Route 128, and New York. With this, we consider that investors may behave differently due to location and region-specific differences.

In addition, we obtain other information relevant to control via Twitter, as each individual has a different Twitter activity (Obschonka et al., 2017). Therefore, as in previous studies (Block et al., 2019; Obschonka et al., 2017), we also control for Twitter behavior using the number of followers (log1p), as well as the number of people an investor follows, i.e., friends (log1p). A third variable that emerges from previous studies (Block et al., 2019) is the number of tweets (log1p) that are used to communicate with followers.

5.4 Results

5.4.1 Descriptive statistics and univariate analysis

The descriptive statistics with means, standard deviations and the correlation matrix for our variables are presented in Table 5-1. 82% of the 822 investors are VCs and the emotional tone of the overall sample reach a mean of 88,32%. Furthermore, 16% of the people in our sample are female investors, 86% are in an US startup hotspot and 74% are founders themselves. The means for the logged variables show 0,52 for IPOs, 8,44 for followers, 6,30 for friends and 6,33 for Tweets.

Our first initial analysis to identify differences between the expressed emotions of VCs and BAs is a t-test, which is presented in Table 5-2. For this, we compare the sample of 677 VCs with the 145 BAs and analyze their positive and negative emotions with the summary variable *emotional tone*. At the significance level of 0.1, the analysis shows significant differences between these two investor types.

Table 5-1: Descriptive statistics and correlation matrix

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Type	0,82	0,38	1								
(2) Emotional Tone	88,32	14,98	0.07	1							
(3) Gender	0,16	0,37	-0.18	0.11	1						
(4) Founder	0,74	0,44	0.18	-0.03	-0.15	1					
(5) Log1p (IPO)	0,52	0,84	0.18	-0.12	-0.14	0.24	1				
(6) Hotspot	0,86	0,35	0.28	-0.04	0.03	-0.05	0.06	1			
(7) Log1p (followers)	8,44	2,16	0.32	0.01	0.04	0.15	0.29	0.16	1		
(8) Log1p(friends)	6,30	1,44	0.11	0.08	0.09	0.04	0.02	0.05	0.45	1	
(9) log1p (Tweets)	6,39	1,63	0.09	0.08	0.00	0.10	0.08	0.05	0.61	0.55	1

Table 5-2: Univariate analysis: *t*-test

	Venture Capitalist = 1 (n = 677)		Business Angel = 0 (n = 145)		t-test	
Variables	**Mean**	**SD**	**Mean**	**SD**	**t**	**p-value**
Emotions						
Emotional tone	88.822	14.485	85.982	16.975	-1.874	0.062

5.4.2 Logistic regression to predict investor type

To predict the probability of whether an investor is a VC or a BA through their expressed emotions, we use logistic regression with a binary variable for investor types. Table 5-3 presents the results of the regression analysis. First, we built models for each type of control variable (*Model 1 – 2)* and then one for all control variables (*Model 3).* The full control model shows negative relationships with *gender* (-1.578; $p < 0.01$), *Tweets* on Twitter (-0.504; $p < 0.01$). Positive relationships with the investor type VC are to the variables *Founder* (0.708; $p < 0.01$), *IPO* (0.421; $p < 0.05$), *Hotspot* (1.516; $p < 0.01$) on the investor control level and to the investor network in the form of Twitter *followers* (0.799; $p < 0.01$) on the Twitter control level. The full model (*Model 4)* adds the measure of *emotional tone*. Here in this full model, the results confirm that there are significant differences between investors on the concept of *emotional tone*. VCs communicate more with positive words assigned to positive emotions than BAs (0.021; $p < 0.01$). In summary, the results show that our hypothesis is supported, as VCs show higher scores on *positive emotions*.

Table 5-3: Main analysis: *Logistic regression (dependent variable: Venture capitalist 1/0)*

	Model 1	Model 2	Model 3	Model 4
	Investor control model	Twitter control model	Full control model	Full model
Independent variable: Investor emotions				
Emotional Tone				0.021***
				(0.007)
Control variables: Investor level				
Gender	-1.015***		-1.578***	-1.685***
	(0.233)		(0.271)	(0.276)
Founder	0.839***		0.708***	0.723***
	(0.215)		(0.236)	(0.239)
log1p(IPO)	0.633***		0.421**	0.443**
	(0.186)		(0.200)	(0.199)
Hotspot	1.847***		1.516***	1.611***
	(0.236)		(0.259)	(0.265)
Control variables: Twitter level				
log1p(followers)		0.802***	0.799***	0.782***
		(0.091)	(0.102)	(0.101)
log1p(friends)		-0.139	-0.050	-0.035
		(0.097)	(0.105)	(0.104)
log1p(Tweets)		-0.405***	-0.504***	-0.512***
		(0.091)	(0.106)	(0.104)
Constant	-0.487*	-1.308***	-2.701***	-4.570***
	(0.261)	(0.489)	(0.579)	(0.846)
Observations	822	822	822	822
Log Likelihood	-322.438	-321.584	-276.643	-272.112
Akaike Inf. Crit.	654.877	651.168	569.285	562.225
Note:				*p<0.1; **p<0.05; ***p<0.01

5.4. Robustness check

In a previous study, Block et al. (2019) pointed out that Twitter samples can also include celebrities ("Twitter superstars"), such as actors, athletes, or well-known musicians. Such public persons often have many followers on social media due to their large fan base. In our sample, the most famous investor has over 19.3 million followers on his profile. Therefore, Block et al. (2019) argue that such superstars may behave differently in communication than professional investors due to their profession. Furthermore, it is possible that such superstar accounts are supported by a team in the back office. For this reason, we control our results by excluding the superstars from our sample. For this purpose, we only use investors who have less than 100,000 followers on their Twitter profiles. This exclusion reduces our sample to 759 investors. Table 5-4 represents our findings for this analysis.

In line with our main analysis, we run four models (*Model 1 – Model 4*). Three of them are for our control variables, and one builds the full model with *emotional tone*. These results of the analysis support our findings from the main analysis, as here also the *emotional tone* (0.020; $p < 0.01$) shows significant differences between VCs and BAs. As in the main analysis, the robustness check also supports our hypothesis.

Table 5-4: Robustness check without Twitter Superstars

	Model 1	Model 2	Model 3	Model 4
	Investor control model	Twitter control model	Full control model	Full model
Independent variable: Investor emotions				
Emotional Tone				0.020^{***}
				(0.007)
Control variables: Investor level				
Gender	-1.014^{***}		-1.697^{***}	-1.793^{***}
	(0.238)		(0.288)	(0.292)
Founder	0.858^{***}		0.727^{***}	0.741^{***}
	(0.218)		(0.246)	(0.249)
log1p(IPO)	0.782^{***}		0.670^{***}	0.688^{***}
	(0.219)		(0.236)	(0.237)
Hotspot	1.865^{***}		1.493^{***}	1.576^{***}
	(0.243)		(0.272)	(0.278)
Control variables: Twitter level				
log1p(followers)		0.975^{***}	1.015^{***}	0.990^{***}
		(0.103)	(0.117)	(0.117)
log1p(friends)		-0.280^{***}	-0.214^{*}	-0.194^{*}
		(0.104)	(0.114)	(0.113)
log1p(Tweets)		-0.439^{***}	-0.562^{***}	-0.565^{***}
		(0.095)	(0.112)	(0.110)
Constant	-0.571^{**}	-1.460^{***}	-2.910^{***}	-4.689^{***}
	(0.267)	(0.510)	(0.609)	(0.894)
Observations	759	759	759	759
Log Likelihood	-304.314	-298.853	-251.166	-247.441
Akaike Inf. Crit.	618.629	605.706	518.332	512.882
Note:				*p<0.1; **p<0.05; ***p<0.01

5.5 Discussion and implications

Our findings have implications for research on the personal characteristics of investors, as well as for practice of entrepreneurs and investors. A summary overview of these implications can be found in Table 5-5 before they are subsequently discussed.

Table 5-5: Implications for practice and research

Investors	Entrepreneurs	Researchers
• VCs and BAs should reflect on their online self-presentation and create awareness about their role • BAs should look for other investors as role models and manage their emotions more positively and professionally	• Create awareness about different investor roles (employed manager vs. individual investor) • Inform yourself about your target group's emotions	• Investigate the perception of investor emotions from the entrepreneurs' point of view and their influence on the choice of a financier • Examine the differences in trustworthy communication between different types of investors • Investigate the impact of a portfolio company's failure on investors' emotions

5.5.1 General discussion and interpretation of the main findings

Although entrepreneurship research, in general, has already explored the emotions and emotional differences of entrepreneurs from other groups (Tata et al., 2017), this has been sparse in the context of investors. Furthermore, in previous research on entrepreneurial finance that compares VCs and BAs, their personal characteristics, such as emotions, up to now were rarely examined. However, despite this, previous research suggests that VCs and BAs differ with respect to their expressed emotions. Therefore, in this study, we aimed to answer the question of how the expressed emotions of VCs and BAs differ. Smith and Bergman (2020) argue that for a comprehensive picture of entrepreneurial resource exchange relationships, all parties need to be considered. Therefore, our results with investor emotions extend this picture by investigating investor emotions, especially of VCs and BAs, and comparing them.

Based on previous research in entrepreneurial finance and psychology, we hypothesized that VCs have a better understanding of their professional role as an employee of a VC organization and thus communicate their emotions more professionally than BAs. In particular, we attribute this to the different backgrounds of investors, with VCs taking on a different role than BAs due to their involvement with a VC organization. Based on our analysis, this hypothesis can be supported, as VCs show significant differences in the concept of *emotional tone*. This result also remains in the further analysis of the robustness check: In the analysis of *emotional tone*, the model shows that VCs are more prone to positive emotions in their expressed emotions via Twitter.

With this study, we contribute to the entrepreneurship literature in different ways. First, we analyze the investor emotions of two key actors from entrepreneurial finance and extend previous knowledge on emotion research in entrepreneurship research which focuses especially on entrepreneurs (1). We show that VCs and BAs also differ in personal characteristics and extend the research stream on the differences between these two types with an emotion perspective (2). We use investors' tweets to operationalize the expressed emotions as a novel method and show how such an approach is useful for researching difficult psychological concepts and target groups (3). Overall we offer an additional starting point (J. Block et al., 2019) for researching psychological concepts in the entrepreneurial finance landscape and their investors.

Since our results show that BAs express more negative emotions than VCs, connections can also be made to other entrepreneurship studies that have captured differences between managers and entrepreneurs (Obschonka et al., 2017). For example, entrepreneurs show stronger expressions of the personality trait neuroticism, i.e., they show their negative emotions more obviously than managers do (Obschonka et al., 2017). Thus, our results also suggest this in a different context as we see VCs in their manager role because some VCs in our sample fulfill this function as partners in the organization. Furthermore, we know from the literature that the setting influences communication and in-work from nonwork communication also affects content (Sanchez-Burks et al., 2003). Consequently, VCs are always connected to their VC organization, even in social media, as communicated content can also influence the employer (positive and negative reputation). Obschonka et al. (2017) explain this in their case with possible departments (e.g., marketing) within the organizations that professionally manage the respective Twitter account of the manager. In our robustness test, we, therefore, also removed accounts with more than 100K followers, but the results remain stable. However, this does not preclude VCs from receiving professional support in general (e.g., through departments within the VC organization) regarding their online self-presentation.

As we know that there are different characteristics between VCs and BAs (De Clercq et al., 2006; Cohen & Wirtz, 2022; Hellmann et al., 2019; Mason & Stark, 2004; van Osnabrugge, 2000), in a previous study on the differences between VCs and BAs Fairchild (2011) argues that these two investor types also differ in smoother factors such as their behavior. We support this argument with our empirical results and show in the context of expressed emotions that VCs and BAs differ – especially that VCs express a more positive tone. Through the previous research findings, various economic distinctions have already been discussed; with our study, a psychological dimension is now also part of this discussion. Therefore, our study introduces a new dimension to this entrepreneurial finance research stream – emotions.

With Twitter and a dataset of 994,969 tweets overall, we offer a new way of researching personal investor characteristics showing insights into their psychology. As Block et al. (2019) show in their earlier study, the richness of such data for investor personality research, we show how to use it for emotion research in an entrepreneurial finance context.

5.5.2 Implications for entrepreneurs and investors

With the results of our study, we also create relevant implications for the practice of entrepreneurial finance and, therefore, for VCs and BAs as well as entrepreneurs. Our research approach shows that public texts on social media such as Twitter also allow making predictions about the emotions expressed there. Therefore, investors and entrepreneurs should understand that their online communication is transparent for the community and, as a result, for future relationship partners. Especially investors should be aware of this when communicating emotionally and expressing their negative feelings to the community. Because as we know, entrepreneurs can choose between alternative sources of financing and accordingly prefer VCs or BAs.

Furthermore, emotions also play a role in relationship strategies (Fili, 2014) and influence behavior accordingly. This is explained by the fact that in a previous study, Fairchild (2011) argued that the behavior of entrepreneurs is also included in their partner evaluation. As a result, we show the practice with our study that the behavior can also be viewed online. Therefore, investors as VCs and BAs can use our findings for a better understanding of their expressed emotions in contrast. Furthermore, our results provide a way to reflect investors' self-presentation.

From an entrepreneur's perspective, our results help to understand important partners better potentially. As we know that investment decisions are also associated with feelings (L. Huang, 2018), our results show, in general, that there are differences in the expressed emotions of VCs and BAs. Previous studies dealing with investor relations of startups have shown that communication with investors includes several dimensions that need to be shaped. Entrepreneurs who know the emotions of their business partners may be able to adapt their activities to these emotional requirements of the partner. This means that if entrepreneurs know the mood of the target group, the content of investor relations can be adapted to it. Since, in our results, VCs achieve significant differences in emotional tone, this may mean for entrepreneurs that these investors also expect more emotional communication from their founding teams. For example, investors also allow themselves to be addressed emotionally (Mason & Stark, 2004). Furthermore, entrepreneurs could create awareness about the different roles between VCs and BAs (employed manager vs. individual investor) and that different roles expect different (emotional) communication. In summary, having an appropriate emotional picture of the different investor types also expands investor relations opportunities. Therefore, our results could help entrepreneurs better understand how emotional investors' are and how they differ.

5.5.3 Limitations and implications for future research

We see this study as an initial point to better understand the emotions of VCs and BAs and give inspiration for future research on investor emotions in the entrepreneurial finance context. Therefore, some limitations of this study go along with promising research areas for future studies.

First, we rely on the emotional concepts of the LIWC software. Since other dictionaries have been developed recently that can also analyze emotional words in a text, such dictionaries could further complement our findings. For example, since LIWC is a closed dictionary, open dictionaries can also be added. Second, we compare VCs and BAs as two key actors in the entrepreneurial finance literature. Nonetheless, there are other actors that may show different emotional reactions. For example, crowdfunding investors are used to the entire investment process being digital and therefore communicating digitally. Third, our data foundation is digital investor communications, so words from other data sets, such as podcasts or videos, might provide further insights.

Second, our results show that VCs and BAs also signal their emotional state via their tweets, which is why, based on this, the question arises to what extent positive or negative emotions actually influence investments. Therefore, further research could investigate how investor emotions are perceived and evaluated by entrepreneurs, thereby answering the question of how entrepreneurs are influenced by investor emotions in their choice of partners.

Third, Mohammad and Turney (2013) consider trust related to emotions. It is known from previous research that trust is also a relevant concept for the entrepreneur-investor relationship (Middelhoff et al., 2014; Shepherd & Zacharakis, 2001). Therefore, further research could extend previous trust research by measuring trust not through interviews or questionnaires but through textual communications, thereby answering the question of how trustworthy communication differs between investor types.

Fourth and finally, emotions can be influenced by different situations, which is why emotional tone tends to be more positive or more negative depending on the situation. While our study presents an overall view of investors' emotional tone, further research could create a panel dataset that looks at emotions in different time windows. Since such panel data sets are also implementable with Twitter (Fisch & Block, 2021), further research could examine how investors' emotions change when, for instance, a portfolio company fails, thereby answering the research question of how investor emotions change when their portfolio firms fail.

5.6 Conclusion

This study provides insights into the emotions that investors leave behind via their Twitter digital footprints and express to their audience. We show differences in the emotions expressed between the investor types VCs and BAs. Going forward, we could use this to stimulate a discussion on how emotions influence decision-making behavior in the investment process of startup financing.

6. Discussion and conclusion

After the four studies of this dissertation have been discussed in Sections 2 - 5, the summary of the key results now follows in Section 6. The contributions of the individual studies as well as across the board in the context of the entire dissertation are also discussed. In addition to theoretical implications, practical implications are also presented. Building on the results of this dissertation, research streams are identified that can be explored in the field of investor relations in the future.

6.1 Summary of the key findings

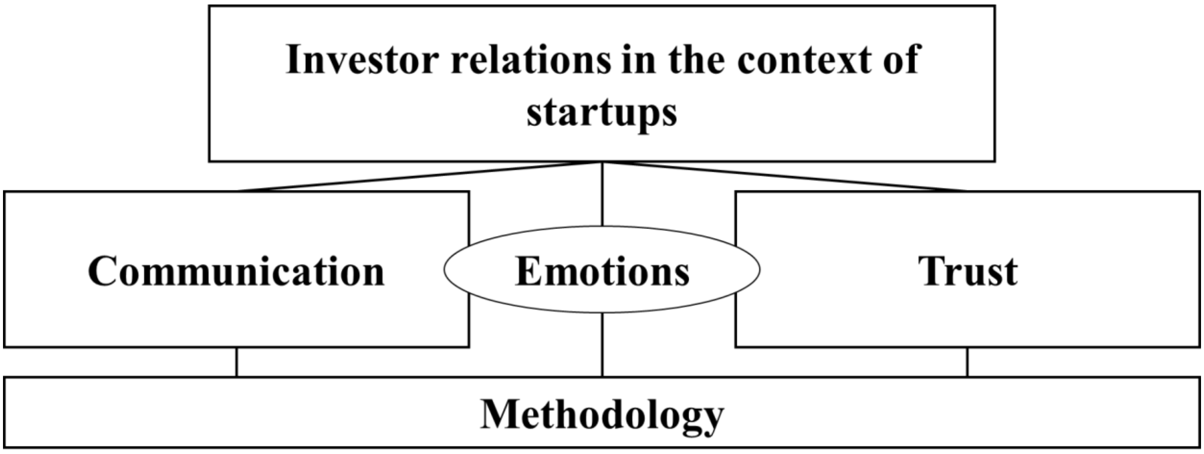
The research stream of entrepreneurial communication builds the overarching conceptual background for all information sharing activities of entrepreneurs with their stakeholders, which includes investors'. Therefore, it is necessary to understand how investor communication is embedded into this research stream. To achieve this and gain a better understanding for investors role in entrepreneurial communication, we perform a bibliometric analysis of previous published studies between 1973 – 2022 (Study 1; Section 2) and analyze 383 articles with 22,086 references. This dataset builds the corpus for a performance analysis and science mapping to develop a framework for entrepreneurial communication. The performance analysis of the published articles per year show that this research stream has developed from an emergence phase to a growth phase with increasing attention. Especially we note that entrepreneurial communication gain interest from nearby research streams, such as strategic communication. From a thematic perspective our results show that the communication with investors (e.g., business angels, crowd investors) is a basic and motor theme which drive the fields development. In detail, the topic analysis shows that entrepreneurial communication and therefore investor communication are influenced by different sub concepts (e.g., impression management, trust). Likewise, the results indicate that the communication of startups and entrepreneurs is characterized by digitization (e.g., social media). Both findings – relationship concepts which are linked to communication as well as the emerging online communication – open new research questions which need to be answered in future studies.

In connection with the findings from the bibliometric analysis (Study 1; Section 2) this dissertation deep dive into a key concept for investor relationships – trust (Bammens & Collewaert, 2014; Middelhoff et al., 2014; Sapienza & Korsgaard, 1996). Due to the heterogeneity of investor types (e.g., BA, VC, Crowd), research on trust in the context of investor relations has been fragmented. So, to get a better understanding of communication and trust (against the backdrop of different investor types), we analyze 32 journal articles through a systematic literature review (Study 2; Section 3). A key finding from this study is the strong link between trust and communication because the information sharing of entrepreneurs' is vital for the development of trust. Regardless of the investor type previous studies shows that communication is the key concept in trust research with an entrepreneurial finance context. Furthermore, trust between VCs and entrepreneurs get most attention in previous research, but online funding trough crowd investors is nearby.

Another finding from the bibliometric analysis (Study 1; Section 2) shows a lack in entrepreneurial communication during exogenous shocks. To address this gap is important because the information sharing is part of building and maintain trust and helps in the reduction of uncertainty – two concept which could broke during crises situations. Therefore, this dissertation addresses this gap with a panel dataset of 110,283 tweets from US-based entrepreneurs during the first wave of COVID-19 in 2020. With this novel dataset we analyze the digital communication from entrepreneurs and how it differs between pre-pandemic and in-pandemic. The results show differences in the emotional part of communication as well as the communication about work. In detail, the results show differences between VC-backed entrepreneurs and investors without funding. This suggests that investor relations are helpful for entrepreneurs and the professionalization of their communication. Furthermore, the context of an exogenous show like COVID-19, which influenced business activities as well as social relationships, show that entrepreneurs use online communities (e.g., Twitter in this case) for their information sharing with stakeholders.

The results from the bibliometric study (Study 1; Section 2) and the literature review (Study 2; Section 3) in combination show that previous research that address entrepreneur-investor relationship address primary the entrepreneur. The perspective of investors has scarcely been researched to date and is still in its infancy. As Smith and Bergman (2020) explain, the understanding of both – entrepreneur and investor – is vital for the overall understanding of investor relations. Therefore, the fourth paper in this dissertation address this gap with a dataset from 822 US investors (VCs; BAs) and their 994,969 short messages on Twitter. The aim of this paper is to bring insights in investor expressed emotions especially how investors type differs. The analyzes of these big data sample follows study 3 and use the text analysis software LIWC with its emotion dictionaries. A key finding is the difference of expressed emotions between VCs and BAs as VCs are more positive in their communication. This suggests a more professional emotional tone in their Tweets especially through their professional background as employee from an VC company. In sum, through the four studies, this dissertation aims to contribute to various areas within the entrepreneurship literature, as discussed below and shown in figure 6-1.

Figure 6-1: Summary of theoretical and methodological implications



Overall, this dissertation contributes to the literature of investor relations in the context of startups (Kollmann & Kuckertz, 2006; Moritz et al., 2015; Schulte, 2012; Wallnöfer & Hacklin, 2013). Although there is already an extensive stream of research on investor relations in general (Hoffmann et al., 2018), these findings are not very transferable to entrepreneurship research, especially since startups have different characteristics than established companies, which are often the subject of previous investor relations research (Kollmann & Kuckertz, 2006; Moritz et al., 2015). In detail, this contribution can be divided between entrepreneurial communication (study 1), trust (study 2) and as well as investor communication (study 3 and 4) - the central conceptualizers in this dissertation.

First, this dissertation contributes to the research stream of entrepreneurial communication (Godulla & Men, 2022; Wiesenberg et al., 2020) by conducting a bibliometric analysis. The research of entrepreneurial communication is fragmented an overview is still missing, which would help to understand this research stream in more detail (Godulla & Men, 2022). Therefore, the bibliometric study (Study 1; Section 2) with a performance analysis and science mapping address this gap. A result of this bibliometric study is a conceptual framework for the key research areas of entrepreneurial communication. Furthermore, in analyzing previous research a research agenda is developed which guide future research (Godulla & Men, 2022). By covering entrepreneurial communication in a comprehensive way, this first study integrates investor communication and forms the conceptual basis for the following studies of this dissertation.

Second, this dissertation contributes to the literature of trust research in (Welter, 2012; Welter & Smallbone, 2006) by synthesizing previous findings on trust between entrepreneurs and different types of investors. Here, a fragmented research field characterized by different entrepreneurial relationships (e.g., relationships with VC, BA, Crowd) is structured by a systematic literature review and a research agenda is derived from it. In doing so, this analysis integrates findings from previous relationship marketing research (Morgan & Hunt, 1994; Palmatier et al., 2006) to provide a conceptual framework for analysis of investor relationship marketing in the context of startups. Using this model, antecedents and outcomes were then identified and synthesized. Thus, this study also builds a bridge between communication and trust, and through the conceptual framework of investor relationship marketing, it shows the connection to other scientific fields mentioned at the beginning. A key finding of this study is the relevance of communication for the formation of trusting entrepreneur-investor relationships. From the results, it appears that communication is an important antecedent to trust and thus attracting investors. Thus, this systematic literature review lays the foundation for communication to be explored in greater depth in study 2 and 3.

Third, by examining communication before and during the first wave of the COVID-19 pandemic, against the backdrop of VC-backed entrepreneurs, this dissertation contributes to entrepreneurial communication in crisis (Godulla & Men, 2022; Wiesenberg et al., 2020). In detail, this study shows the impact of an exogenous shock on entrepreneurs' digital self-presentation. This also provides further context for the impression management literature (Collewaert et al., 2021; Parhankangas & Ehrlich, 2014). This adds the crisis context to the existing literature and provides guidance on how entrepreneurs behave communicatively in times of crisis. Since social media are also relevant in stakeholder communication and impressions are made there with these target groups (see also Study 1; Section 2), entrepreneurs thus also communicate with investors via social media (Moritz et al., 2015). By considering VC funding in part of the sample, the detail also considers that the cooperation with an VC influences the professionalism of entrepreneurial communication (Hellmann & Puri, 2002). Although entrepreneurs have a central role in investor relations and therefore also in communication to investors to control the information asymmetry, investors must not be completely ignored. Against this backdrop, Study 3 is dedicated to investor communication and details how VCs and BAs express their emotions via social media.

Fourth, this dissertation contributes to the research on expressed emotions from entrepreneurs' as well as investors' through their online communication (Fisch & Block, 2021; Tata et al., 2017). In studying the entrepreneurial communication during the first wave of

COVID-19 (Study 3; Section 4) we measure the expression of positive and negative emotions via their Twitter communication. Thus, we show how an exogenous shock affects psychological aspects of communication (emotions). Here, the results suggest that cooperation with VCs has an influence on the emotional stability of entrepreneurs in that VC-funded ones communicate more professionally. Furthermore, this dissertation compares the expressed emotions of VCs and BAs, a concept that is very sparse in previous research (Study 4; Section 5).

Fifth, besides the theoretical implications, this dissertation also contributes methodologically to entrepreneurship research. Nowadays, a large number of different data points (e.g., social media, newspaper, press released) are available in an unstructured way, which can be scientifically analyzed by technical tools, such as computer-aided text analysis (Antons et al., 2020). While scholars are highlighting the importance of big data and related new research methods (Obschonka & Audretsch, 2020; Schwab & Zhang, 2019; Wiklund et al., 2019), their use in entrepreneurship research is currently only emerging. However, they can make an important contribution to the progress of entrepreneurship research (Wiklund et al., 2019). This dissertation contributes to the further advancement of these new analytic possibilities by using big data in combination with text analysis to gain insight in Study 3 (110,283 tweets) and Study 4 (994,969 tweets), respectively. In doing so, we build on the research stream of social media as a big data source (Block et al., 2022b; Fisch & Block, 2021; Tata et al., 2017) and use digital footprints of entrepreneurs' and investors' to gain new insights in their behavior – in this case entrepreneurial communication during crises and emotions of investors. Furthermore, in the context of this dissertation, investors are an important target group for the analyses, but this often leads to challenges in the practical implementation of studies to identify and subsequently recruit these individuals for a study. Therefore, such an approach with text analysis of social media data opens access to target groups that are otherwise difficult to reach.

6.2 Practical implications

Next to the theoretical and methodological implications, this dissertation also gives implications for actors from the overall startup ecosystem who are directly or indirectly involved.

Considered across all studies, these findings can help in practice to ensure that both entrepreneurs and investors pay more attention to the two key concepts of their relationship - communication and trust - to optimize their relationships. The results for the concept of trust reveal diverse factors that are considered antecedents of a trusting relationship. Since trust is important to both parties in the relationship, entrepreneurs and investors can develop and apply appropriate strategies to signal trustworthiness to their partner. Furthermore, these results also reveal what consequences trust can have, which are thus the outcomes of this concept. This can also create incentives to act in a trustworthy manner. Furthermore, it is evident from the systematic literature review that entrepreneur-investor fit, in addition to communication, also plays a role in building trust. If these findings are transferred into practice, this can lead to entrepreneurs taking this fit into account in advance in their communication strategies when addressing potential investors. If, for example, entrepreneurs inform themselves about similarities (e.g., shared values, shared experiences) to a potential investor before the first talks, such aspects can be integrated concretely into the communication and thus the self-presentation can be actively controlled. In the context of studies 2 and 3, these findings are helpful in sharpening the awareness of digital communication. Both entrepreneurs and investors communicate their feelings and emotions via social media, which is also perceived accordingly by the community of the respective platform. Accordingly, entrepreneurs and investors should take this into account when communicating digitally to guide their own self-presentation. Actors should be aware that their own self-image can be conveyed not only actively but also passively. It must therefore be clear to entrepreneurs as well as investors that they also play a role when they communicate privately via social media, which is then perceived and evaluated by (external) stakeholders.

6.3 Future research avenues for investor communication in startups

This dissertation builds a starting point for the further development of investor relations research in the context of startups. While the four studies in this dissertation make contributions to filling research gaps, they also point to pathways for future studies. Therefore, this section now provides impetus for future research to further stimulate investor relations research for startups. The summary of these point is presented in Table 6-1.

Connect the concepts trust and emotions in entrepreneur-investor relationships

As mentioned above, this dissertation address three core relationship concepts: communication, trust and emotions. Communication with trust and communication with emotions are primarily connected in the studies 2-4. Nevertheless, there is also need for a stronger connection of trust and emotions. As emotions are part of the entrepreneurial communication (Fisch & Block, 2021; Tata et al., 2017) and study 2 shows the link between trust and communication, there is gap in the understanding of emotions in light of investor relations. In this vein, future research should address this challenge and could ask how these two concepts are connected in influence each other. Furthermore, this dissertation show that emotions are expressed through different specifications (e.g., positive, negative) (Pennebaker et al., 2015). These opens up further research opportunities to study different emotion specifications and its connection with trust building to investors.

Bring the heterogenous investor landscape into light of investor relations research

Across all studies (especially study 2-4), VCs and BAs are key investors in the field and therefore enjoy a great deal of interest in the academic discussion. Thus, one of the main focuses of the research shows how relationships between VCs, BAs and entrepreneurs can be shaped and what influence they have. However, this ignores the heterogeneity of the investor landscape in practice because recent studies show a growing number of different investor types. And as known from previous research, every investor type has different characteristics (e.g., behavior, involvement, deal size) which should consider in research (Drover et al., 2017). Although this suggestion is also addressed as future research direction in study 1 I take this up again here to highlight its relevance for entrepreneurs. Therefore, future research should address different investor types (e.g., CVC, Family Offices, ICO) in their studies and bring them into connection with questions from investor relations. For example, future studies could ask how different investor types differ in their requirements of communication and investor relations strategies. By straddling the corporate world and the startup world, for example, CVCs may also choose to adopt static corporate structures rather than flexible startup structures (Röhm & Kuckertz, 2020). What opens the question of how these startup-corporate relationship changes startups investor relations (e.g., in context of professionalization).

Add the digitization of relationships to the research stream of entrepreneurial investor relations

In study 1 this dissertation gives first insights of entrepreneurial communication in a digital context. And especially the studies 2 – 4 have made initial connections to digital investor relations. While entrepreneurs and investors communicate digitally (e.g., in social media) (e.g., Moritz et al. 2015) and investments are also partly handled via digital platforms (e.g., crowdfunding), there is a lack of research on digital investor relations for startups. Furthermore, with the growing usage of artificial intelligence (e.g., trough Chat GPT), entrepreneurs communication could be adapted and supported with these technology (see for example Short and Short (2023) for a first case to prepare pitch texts with artificial intelligence of Chat GPT), which also develops new and unanswered questions. Therefore, future research should address this gap. For example, scholars could ask how the communication requirements differ between the communication context (offline vs. online). In addition, the question arises as to how artificial intelligence will change investor communication and what requirements will arise for entrepreneurs as a result. Furthermore, and in connection with the growing investor landscape, future research could study different requirements for online communication between the different investor types. And additional questions arise from the concepts in this dissertation so that future research is needed for relationship concepts (e.g., trust, emotions) and how they might change in a digital investor relations environment.

Draw attention on the digitization of investors value chain and its implications for relationship management

The studies 3 and 4 uses big datasets (especially study 4 with nearly one million tweets) what are reactions of previous calls to use such datasets (Wiklund et al., 2019). However, these approaches are just the starting point of new technology-driven research opportunities (Obschonka & Audretsch, 2020; Schwab & Zhang, 2019). For example, initial studies are starting that use artificial intelligence and machine learning to compare investment screening between human investors and machines (Retterath, 2020a), or predict the survival of startups (Antretter et al., 2019). This also means that a digital transformation is taking place on the part of investors. And due to the growing importance of this technology in practice (Blohm et al., 2020), it can be assumed that it will also have a direct impact on investor relations. For example, the question arises how the value chain of investors is changing through this transformation process and especially with the use of artificial intelligence. Furthermore, future research should summarize the status quo in research and practice of the integration of artificial intelligence for an overview of the landscape. Again, there may be differences depending on investor type what should addressed in future research.

Table 6-1: Future research directions for entrepreneurial investor relations

<u>*Connect the concepts trust and emotions in entrepreneur-investor relationships*</u>
Challenge:
Emotions are an important part of the individual entrepreneurial communication (e.g., study 3) and different types of emotions are existed (Tata et al. 2017; Pennebaker et al., 2015). In the light of trust building between entrepreneurs in investors emotions also play an underlying role which should be considered.
Suggestions for future research questions:
How do emotions and trust building influence each other in entrepreneur-investor relationship? How do different emotions (e.g., positive, negative) affect trust building with investors?
<u>*Bring the heterogenous investor landscape into light of investor relations research*</u>
Challenge:
The financing landscape is driven by a heterogenous group of investor types what leads to relationships with investor who have different characteristics (Block et al., 2018; Drover et al., 2017). Entrepreneurs must also take these different characteristics into account in their communication and address them accordingly.
Suggestions for future research questions:
What requirements do new investors place on investor communication? How do investor communication strategies differ by investor? How does investor communication change when, for example, established organizations are invested by a CVC?
<u>*Add the digitization of relationships to the research stream of entrepreneurial investor relations*</u>
Challenge:
Relationships don't happen exclusively offline and in person. Entrepreneurs are also increasingly building relationships online and anonymously through their self-presentation on social media (Fischer and Reuber 2014). Therefore, advances in digitization are also changing the place of communication.
Suggestions for future research questions:
How do investor communication requirements differ between online and offline? How does artificial intelligence change the investor communication of startups and what are the requirements for entrepreneurs? How do different types of investors differ in terms of their requirements for online communication from entrepreneurs (e.g., VCs vs. BAs; VCs vs. crowd investors)? How are relationship concepts (e.g., trust, emotions) changing in digital investor relations?
<u>*Draw attention on the digitization of investors value chain and its implications for relationship management*</u>
Challenge:
Investors and especially VCs are also in a digital transformation process of their organization. From traditional and manual investment approaches towards data driven approaches (Retterath, 2020b; Weibl & Hess, 2019). And this transformation also has an impact on the value chain of investors and therefore on their investments processes.
Suggestions for future research questions:
How is the digitization of startup investors changing their value chain? How is artificial intelligence changing the investor value chain? What is the status quo of data driven investment approaches and how do different investor types differ in these approaches (e.g., VC vs. ICO)?

6.4 Conclusion

This dissertation addresses the research on investor relations in the context of startups and shed light on an important relationship for entrepreneurs' – those with investors. In doing so, it shows that investor relations is an overarching term that integrate multiple sub concepts which are important for the creation of successful relationships. Three of them are part of this dissertation – communication, emotions and trust. On the one hand, overviews of the research landscape of these concepts are presented, and on the other hand, new empirical methods are used to investigate them. Especially due to the complexity of different relationship concepts such as trust or emotions for example, this dissertation shows how new emerging research methods can address these challenges. Due to the diversity of investor types and the increasing heterogeneity of the investor landscape, I am aware that the studies in my dissertation are only a starting point for further investor relations research with a focus on startups. In sum, this dissertation helps for a better understanding of entrepreneur-investor relationship and offer implications for the creation of these relationships.

References

Abeysekera, I. (2019). How Best to Communicate Intangible Resources on Websites to Inform Corporate-Growth Reputation of Small Entrepreneurial Businesses. *Journal of Small Business Management*, *57*(3), 738–756. https://doi.org/10.1111/jsbm.12320

Aggarwal, R., Gopal, R., Gupta, A., & Singh, H. (2012). Putting Money Where the Mouths Are: The Relation Between Venture Financing and Electronic Word-of-Mouth. *Information Systems Research*, *23*(3-part-2), 976–992. https://doi.org/10.1287/isre.1110.0402

Ahlers, G. K., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in Equity Crowdfunding. *Entrepreneurship Theory and Practice*, *39*(4), 955–980. https://doi.org/10.1111/etap.12157

Albrecht, S., Lutz, B., & Neumann, D. (2020). The behavior of blockchain ventures on Twitter as a determinant for funding success. *Electronic Markets*, *30*(2), 241–257. https://doi.org/10.1007/s12525-019-00371-w

Aldrich, H. E., & Fiol, C. M. (1994). Fools Rush in? The Institutional Context of Industry Creation. *Academy of Management Review*, *19*(4), 645-670. https://doi.org/10.2307/258740

Allison, T. H, McKenny, A. F, & Short, J. C. (2013). The effect of entrepreneurial rhetoric on microlending investment: An examination of the warm-glow effect. *Journal of Business Venturing*, *28*(6), 690–707. https://doi.org/10.1016/j.jbusvent.2013.01.003

Alnajem, M., Mostafa, M. M., & ElMelegy, A. R. (2021). Mapping the first decade of circular economy research: a bibliometric network analysis. *Journal of Industrial and Production Engineering*, *38*(1), 29–50. https://doi.org/10.1080/21681015.2020.1838632

Amit, R., Brander, J., & Zott, C. (1998). Why do venture capital firms exist? theory and canadian evidence. *Journal of Business Venturing*, *13*(6), 441–466. https://doi.org/10.1016/S0883-9026(97)00061-X

Anand, A., Argade, P., Barkemeyer, R., & Salignac, F. (2021). Trends and patterns in sustainable entrepreneurship research: A bibliometric review and research agenda. *Journal of Business Venturing*, *36*(3), 106092. https://doi.org/10.1016/j.jbusvent.2021.106092

Anderson, E., & Weitz, B. (1989). Determinants of Continuity in Conventional Industrial Channel Dyads. *Marketing Science*, *8*(4), 310–323. https://doi.org/10.1287/mksc.8.4.310

Anglin, A. H., Short, J. C, Drover, W., Stevenson, R. M., McKenny, A. F., & Allison, T. H. (2018). The power of positivity? The influence of positive psychological capital language on crowdfunding performance. *Journal of Business Venturing*, *33*(4), 470–492. https://doi.org/10.1016/j.jbusvent.2018.03.003

Antons, D., Grünwald, E., Cichy, P., & Salge, T. O. (2020). The application of text mining methods in innovation research: current state, evolution patterns, and development priorities. *R&D Management*, *50*(3), 329–351. https://doi.org/10.1111/radm.12408

Antretter, T., Blohm, I., Grichnik, D., & Wincent, J. (2019). Predicting new venture survival: A Twitter-based machine learning approach to measuring online legitimacy. *Journal of Business Venturing Insights*, *11*, e00109. https://doi.org/10.1016/j.jbvi.2018.e00109

Aria, M., & Cuccurullo, C. (2017). bibliometrix : An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Aria, M., Cuccurullo, C., D'Aniello, L., Misuraca, M., & Spano, M. (2022). Thematic Analysis as a New Culturomic Tool: The Social Media Coverage on COVID-19 Pandemic in Italy. *Sustainability (Switzerland)*, *14*(6), 3643. https://doi.org/10.3390/su14063643

Arz, C. (2017). Mechanisms of Organizational Culture for Fostering Corporate Entrepreneurship: A Systematic Review and Research Agenda. *Journal of Enterprising Culture*, *25*(04), 361–409. https://doi.org/10.1142/S0218495817500145

Bailey, D., Clark, J., Colombelli, A., Corradini, C., Propris, L. de, Derudder, B., Fratesi, U., Fritsch, M., Harrison, J., Hatfield, M., Kemeny, T., Kogler, D. F., Lagendijk, A., Lawton, P., Ortega-Argilés, R., Otero, C. I., & Usai, S. (2020). Regions in a time of pandemic. *Regional Studies*, *54*(9), 1163–1174. https://doi.org/10.1080/00343404.2020.1798611

Balachandra, L., Fischer, K., & Brush, C. (2021). Do (women's) words matter? The influence of gendered language in entrepreneurial pitching. *Journal of Business Venturing Insights*, *15*. https://doi.org/10.1016/j.jbvi.2021.e00224

Baldwin, M. W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, *112*(3), 461–484. https://doi.org/10.1037/0033-2909.112.3.461

Bammens, Y., & Collewaert, V. (2014). Trust Between Entrepreneurs and Angel Investors. *Journal of Management*, *40*(7), 1980–2008. https://doi.org/10.1177/0149206312463937

Baron, R. A. (2008). The Role of Affect in the Entrepreneurial Process. *Academy of Management Review*, *33*(2), 328–340. https://doi.org/10.5465/amr.2008.31193166

Barrett, L. F., Mesquita, B., Ochsner, K. N., & Gross, J. J. (2007). The experience of emotion. *Annual Review of Psychology*, *58*, 373–403. https://doi.org/10.1146/annurev.psych.58.110405.085709

Bayar, O., & Kesici, E. (2020). The Impact of Social Media on Venture Capital Financing: Evidence from Twitter Interactions. *SSRN Electronic Journal*. Advance online publication. https://doi.org/10.2139/ssrn.3711796

Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, *58*(2), 593–609. https://doi.org/10.1007/s11187-021-00544-y

Bellavitis, C., Filatotchev, I., Kamuriwo, D. S., & Vanacker, T. (2017). Entrepreneurial finance: new frontiers of research and practice. *Venture Capital*, *19*(1-2), 1–16. https://doi.org/10.1080/13691066.2016.1259733

Berger, E. S. C., Kuckertz, A., & van der Ende Melito. (2015). Crowdfunding: mehr als nur Kapitalbeschaffung–wie Startups von der Vernetzung mit ihren Investoren profitieren können. Entrepreneurship heute: Unternehmerisches Denken angesichts der Herausforderungen einer vernetzten Wirtschaft. In F. Keuper & M. Schomann (Eds.), *Entrepreneurship heute: Unternehmerisches Denken angesichts der Herausforderungen einer vernetzten Wirtschaft* (pp. 62–81). Logos Verlag.

Berger, E. S. C., von Briel, F., Davidsson, P., & Kuckertz, A. (2021). Digital or not – The future of entrepreneurship and innovation. *Journal of Business Research*, *125*, 436–442. https://doi.org/10.1016/j.jbusres.2019.12.020

Berger, E. S. C., & Köhn, A. (2020). Exploring the differences in early-stage start-up valuation across countries: an institutional perspective. *International Entrepreneurship and Management Journal*, *16*(1), 327–344. https://doi.org/10.1007/s11365-018-0534-3

Berger, E. S. C., & Blanka, C. (2023). Comprehensive and multifaceted perspectives on sustainability, urban studies, and entrepreneurship. *Small Business Economics*. Advance online publication. https://doi.org/10.1007/s11187-023-00762-6

Block, J., & Sandner, P. (2009). What is the effect of the financial crisis on venture capital financing? Empirical evidence from US Internet start-ups. *Venture Capital*, *11*(4), 295–309. https://doi.org/10.1080/13691060903184803

Block, J., Fisch, C. O., & 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), 61–95. https://doi.org/10.1080/13662716.2016.1216397

Block, J., Colombo, M. G., Cumming, D. J., & Vismara, S. (2018). New players in entrepreneurial finance and why they are there. *Small Business Economics*, *50*(2), 239–250. https://doi.org/10.1007/s11187-016-9826-6

Block, J., Fisch, C. O., Obschonka, M., & Sandner, P. G. (2019). A personality perspective on business angel syndication. *Journal of Banking & Finance*, *100*, 306–327. https://doi.org/10.1016/j.jbankfin.2018.10.006

Block, J., & Fisch, C. (2020). Eight tips and questions for your bibliographic study in business and management research. *Management Review Quarterly*, *70*(3), 307–312. https://doi.org/10.1007/s11301-020-00188-4

Block, J., Fisch, C., & Rehan, F. (2020). Religion and entrepreneurship: a map of the field and a bibliometric analysis. *Management Review Quarterly*, *70*(4), 591–627. https://doi.org/10.1007/s11301-019-00177-2

Block, J., Groh, A., Hornuf, L., Vanacker, T., & Vismara, S. (2021b). The entrepreneurial finance markets of the future: a comparison of crowdfunding and initial coin offerings. *Small Business Economics*, *57*(2), 865–882. https://doi.org/10.1007/s11187-020-00330-2

Block, J., Fisch, C., & Hirschmann, M. (2022a). The determinants of bootstrap financing in crises: evidence from entrepreneurial ventures in the COVID-19 pandemic. *Small Business Economics*, *58*(2), 867–885. https://doi.org/10.1007/s11187-020-00445-6

Block, J., Fisch, C., & Diegel, W. (2022b). Schumpeterian entrepreneurial digital identity and funding from venture capital firms. *The Journal of Technology Transfer*. Advance online publication. https://doi.org/10.1007/s10961-022-09973-7 (in press)

Block, J., Hirschmann, M., & Fisch, C. (2021a). Which criteria matter when impact investors screen social enterprises? *Journal of Corporate Finance*, *66*, 101813. https://doi.org/10.1016/j.jcorpfin.2020.101813

Blohm, I., Antretter, T., Sirén, C., Grichnik, D., & Wincent, J. (2020). It's a Peoples Game, Isn't It?! A Comparison Between the Investment Returns of Business Angels and

Machine Learning Algorithms. *Entrepreneurship Theory and Practice*, 104225872094520. https://doi.org/10.1177/1042258720945206

Bonini, S., & Capizzi, V. (2019). The role of venture capital in the emerging entrepreneurial finance ecosystem: future threats and opportunities. *Venture Capital*, *21*(2-3), 137–175. https://doi.org/10.1080/13691066.2019.1608697

Booth, A., Papaioannou, D., & Sutton, A. (2012). *Systematic approaches to a successful literature review*. Sage.

Bozic, B. (2017). Consumer trust repair: A critical literature review. *European Management Journal*, *35*(4), 538–547. https://doi.org/10.1016/j.emj.2017.02.007

Brändle, L., Signer, H., & Kuckertz, A. (2023). Socioeconomic status and entrepreneurial networking responses to the COVID-19 crisis. *Journal of Business Economics*, *93*(1-2), 111–147. https://doi.org/10.1007/s11573-022-01120-w

Bretas, V. P., & Alon, I. (2021). Franchising research on emerging markets: Bibliometric and content analyses. *Journal of Business Research*, *133*, 51–65. https://doi.org/10.1016/j.jbusres.2021.04.067

Brown, R., & Rocha, A. (2020). Entrepreneurial uncertainty during the Covid-19 crisis: Mapping the temporal dynamics of entrepreneurial finance. *Journal of Business Venturing Insights*, *14*, e00174. https://doi.org/10.1016/j.jbvi.2020.e00174

Brown, R., Rocha, A., & Cowling, M. (2020). Financing entrepreneurship in times of crisis: Exploring the impact of COVID-19 on the market for entrepreneurial finance in the United Kingdom. *International Small Business Journal: Researching Entrepreneurship*, *38*(5), 380–390. https://doi.org/10.1177/0266242620937464

Brüne, N., & Lutz, E. (2020). The effect of entrepreneurship education in schools on entrepreneurial outcomes: a systematic review. *Management Review Quarterly*, *70*(2), 275–305. https://doi.org/10.1007/s11301-019-00168-3

Budler, M., Župič, I., & Trkman, P. (2021). The development of business model research: A bibliometric review. *Journal of Business Research*, *135*, 480–495. https://doi.org/10.1016/j.jbusres.2021.06.045

Burns, B. L., Barney, J. B., Angus, R. W., & Herrick, H. N. (2016). Enrolling Stakeholders under Conditions of Risk and Uncertainty. *Strategic Entrepreneurship Journal*, *10*(1), 97–106. https://doi.org/10.1002/sej.1209

Cable, D. M., & Shane, S. (1997). A prisoner's dilemma approach to entrepreneur-venture capitalist relationships. *Academy of Management Review*, *22*(1), 142–176. https://doi.org/10.5465/amr.1997.9707180262

Cardon, M. S., Foo, M.-D., Shepherd, D., & Wiklund, J. (2012). Exploring the Heart: Entrepreneurial Emotion is a Hot Topic. *Entrepreneurship Theory and Practice*, *36*(1), 1–10. https://doi.org/10.1111/j.1540-6520.2011.00501.x

Chaplin, T. M. (2015). Gender and Emotion Expression: A Developmental Contextual Perspective. *Emotion Review : Journal of the International Society for Research on Emotion*, *7*(1), 14–21. https://doi.org/10.1177/1754073914544408

Chapple, D., Pollock, N., & D'Adderio, L. (2021). From Pitching to Briefing: Extending entrepreneurial storytelling to new audiences. *Organization Studies*. Advance online publication. https://doi.org/10.1177/01708406211024564

Chaudhri, V., Pridmore, J., & Mauck, C. (2022). Assembling the Start-up Brand: A Process Framework for Understanding Strategic Communication Challenges. *International Journal of Strategic Communication*, *16*(2), 206–221. https://doi.org/10.1080/1553118X.2021.1976784

Chemmanur, T. J., & Chen, Z. (2014). Venture Capitalists Versus Angels: The Dynamics of Private Firm Financing Contracts. *Review of Corporate Finance Studies*, *3*(1-2), 39–86. https://doi.org/10.1093/rcfs/cfu009

Chen, Y., & Bellavitis, C. (2020). Blockchain disruption and decentralized finance: The rise of decentralized business models. *Journal of Business Venturing Insights*, *13*, e00151. https://doi.org/10.1016/j.jbvi.2019.e00151

Chen, Z. F., Ji, Y. G., & Men, L. R. (2021). Effective social media communication for startups in China: Antecedents and outcomes of organization–public dialogic communication. *New Media and Society*. Advance online publication. https://doi.org/10.1177/14614448211051984

Chen, Z. F., Ji, Y. G., & Men, L. R. (2017). Strategic Use of Social Media for Stakeholder Engagement in Startup Companies in China. *International Journal of Strategic Communication*, *11*(3), 244–267. https://doi.org/10.1080/1553118X.2017.1298114

Cherry, B. (2015). Entrepreneur as trust-builder: interaction frequency and relationship duration as moderators of the factors of perceived trustworthiness. *International Journal of Business and Globalisation*, *14*(1), Article 66098, 97. https://doi.org/10.1504/IJBG.2015.066098

Chun, J., Ahn, J., Kim, Y., & Lee, S. (2021). Using Deep Learning to Develop a Stock Price Prediction Model Based on Individual Investor Emotions. *Journal of Behavioral Finance*, *22*(4), 480–489. https://doi.org/10.1080/15427560.2020.1821686

Ciuchta, M. P., Letwin, C., Stevenson, R., McMahon, S., & Huvaj, M. N. (2018). Betting on the coachable entrepreneur: Signaling and social exchange in entrepreneurial pitches. *Entrepreneurship: Theory and Practice*, *42*(6), 860–885. https://doi.org/10.1177/1042258717725520

Clark, C. (2008). The impact of entrepreneurs' oral 'pitch' presentation skills on business angels' initial screening investment decisions. *Venture Capital*, *10*(3), 257–279. https://doi.org/10.1080/13691060802151945

Clarke, J. S., Cornelissen, J. P., & Healey, M. P. (2019). Actions speak louder than words: How figurative language and gesturing in entrepreneurial pitches influences investment judgments. *Academy of Management Journal*, *62*(2), 335–360. https://doi.org/10.5465/amj.2016.1008

Clingingsmith, D., Drover, W., & Shane, S. (2023). Examining the outcomes of entrepreneur pitch training: An exploratory field study. *Small Business Economics, 60(3), 947-974*. https://doi.org/10.1007/s11187-022-00619-4

Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). An approach for detecting, quantifying, and visualizing the evolution of a research field: A practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*, *5*(1), 146–166. https://doi.org/10.1016/j.joi.2010.10.002

Cohen, L., & Wirtz, P. (2022). Decision-making style in entrepreneurial finance and growth. *Small Business Economics*, *59*(1), 183–210. https://doi.org/10.1007/s11187-021-00528-y

Collewaert, V., Vanacker, T., Anseel, F., & Bourgois, D. (2021). The sandwich game: Founder-CEOs and forecasting as impression management. *Journal of Business Venturing*, *36*(1), 106075. https://doi.org/10.1016/j.jbusvent.2020.106075

Constantin, F., & Kavoura, A. (2022). Digital Entrepreneurship via Sustainable Online Communication of Dentistry Profession, Oradea, Romania: A Longitudinal Analysis. *Sustainability (Switzerland)*, *14*(2). https://doi.org/10.3390/su14020802

Crișan, E. L., Salanță, I. I., Beleiu, I. N., Bordean, O. N., & Bunduchi, R. (2021). A systematic literature review on accelerators. *Journal of Technology Transfer*, *46*(1), 62–89. https://doi.org/10.1007/s10961-019-09754-9

Crunchbase. (2021). *What are Crunchbase Hubs?* https://support.crunchbase.com/hc/en-us/articles/360011742173-What-are-Crunchbase-Hubs- [Retrieved May 2, 2023]

Crunchbase. (2022, February 8). *Crunchbase: Discover innovative companies and the people behind them*. https://www.crunchbase.com/ [Retrieved May 2, 2023]

Dai, H., Yin, J., Wang, K., Tsai, S.-B., Zhou, B., & Lin, W.-P. (2018). Trust Building in Dynamic Process of Internet Entrepreneurial Social Network. *IEEE Access*, *6*, 79138–79150. https://doi.org/10.1109/ACCESS.2018.2883755

Das, T. K., & Teng, B.-S. (1996). Risk Types And Inter-Firm Alliance Structures. *Journal of Management Studies*, *33*(6), 827–843. https://doi.org/10.1111/j.1467-6486.1996.tb00174.x

Das, T. K., & Teng, B.-S. (1998). Between Trust and Control: Developing Confidence in Partner Cooperation in Alliances. *Academy of Management Review*, *23*(3), 491. https://doi.org/10.2307/259291

Davis, B. C., Hmieleski, K. M., Webb, J. W., & Coombs, J. E. (2017). Funders' positive affective reactions to entrepreneurs' crowdfunding pitches: The influence of perceived product creativity and entrepreneurial passion. *Journal of Business Venturing*, *32*(1), 90–106. https://doi.org/10.1016/j.jbusvent.2016.10.006

de Bettignies, J.-E. , & Brander, J. A. (2007). Financing entrepreneurship: Bank finance versus venture capital. *Journal of Business Venturing*, *22*(6), 808–832. https://doi.org/10.1016/j.jbusvent.2006.07.005

De Clercq, D., & Sapienza, H. J. (2001). The creation of relational rents in venture capitalist-entrepreneur dyads. *Venture Capital*, *3*(2), 107–127. https://doi.org/10.1080/13691060110045661

De Clercq, D., & Sapienza, H. J. (2005). When Do Venture Capital Firms Learn from Their Portfolio Companies? *Entrepreneurship Theory and Practice*, *29*(4), 517–535. https://doi.org/10.1111/j.1540-6520.2005.00096.x

De Clercq, D., & Sapienza, H. J. (2006). Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance. *Journal of Business Venturing*, *21*(3), 326–347. https://doi.org/10.1016/j.jbusvent.2005.04.007

De Clercq, D., Fried, V. H., Lehtonen, O., & Sapienza, H. J. (2006). An Entrepreneur's Guide to the Venture Capital Galaxy. *Academy of Management Perspectives*, *20*(3), 90–112. https://doi.org/10.5465/AMP.2006.21903483

Dempsey, N. (2021, August 17). Venture Capital Is Still A 'Boys' Club.' Let's Start To Change. *Crunchbase News*. https://news.crunchbase.com/news/venture-capital-female-gender-diversity/

Deyanova, K., Brehmer, N., Lapidus, A., Tiberius, V., & Walsh, S. (2022). Hatching start-ups for sustainable growth: a bibliometric review on business incubators. *Review of Managerial Science*, *16*, 2083-2109. https://doi.org/10.1007/s11846-022-00525-9

Doern, R. (2016). Entrepreneurship and crisis management: The experiences of small businesses during the London 2011 riots. *International Small Business Journal: Researching Entrepreneurship*, *34*(3), 276–302. https://doi.org/10.1177/0266242614553863

Doern, R., Williams, N., & Vorley, T. (2019). Special issue on entrepreneurship and crises: business as usual? An introduction and review of the literature. *Entrepreneurship & Regional Development*, *31*(5-6), 400–412. https://doi.org/10.1080/08985626.2018.1541590

Dolhey, S. (2019). A bibliometric analysis of research on entrepreneurial intentions from 2000 to 2018. *Journal of Research in Marketing and Entrepreneurship*, *21*(2), 180–199. https://doi.org/10.1108/JRME-02-2019-0015

Dolphin, R. R. (2004). The strategic role of investor relations. *Corporate Communications: An International Journal*, *9*(1), 25–42. https://doi.org/10.1108/13563280410516474

Doney, P. M., & Cannon, J. P. (1997). An Examination of the Nature of Trust in Buyer-Seller Relationships. *Journal of Marketing*, *61*(2), 35. https://doi.org/10.2307/1251829

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Dorfleitner, G., Hornuf, L., & Weber, M. (2018). Dynamics of investor communication in equity crowdfunding. *Electronic Markets*, *28*(4), 523–540. https://doi.org/10.1007/s12525-018-0294-5

Down, S., & Warren, L. (2008). Constructing narratives of enterprise: Clichés and entrepreneurial self-identity. *International Journal of Entrepreneurial Behaviour and Research*, *14*(1), 4–23. https://doi.org/10.1108/13552550810852802

Dreher, S. (2014). Social media and the world of work. *Corporate Communications: An International Journal*, 19(4), 344–356. https://doi.org/10.1108/CCIJ-10-201

Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Research: Venture Capital, Corporate Venture Capital, Angel Investment, Crowdfunding, and Accelerators. *Journal of Management*, *43*(6), 1820–1853. https://doi.org/10.1177/0149206317690584

Duffner, S., Schmid, M. M., & Zimmermann, H. (2009). Trust and Success in Venture Capital Financing-an Empirical Analysis with German Survey Data. *Kyklos*, *62*(1), 15–43. https://doi.org/10.1111/j.1467-6435.2009.00426.x

Durkin, M., McGowan, P., & Babb, C. (2013). Banking support for entrepreneurial new venturers. *Journal of Small Business and Enterprise Development*, *20*(2), 420–433. https://doi.org/10.1108/14626001311326806

Ekman, P. (1992). An argument for basic emotions. *Cognition & Emotion*, *6*(3-4), 169–200. https://doi.org/10.1080/02699939208411068

Fairchild, R. (2011). An entrepreneur's choice of venture capitalist or angel-financing: A behavioral game-theoretic approach. *Journal of Business Venturing*, *26*(3), 359–374. https://doi.org/10.1016/j.jbusvent.2009.09.003

Feola, R., Vesci, M., Marinato, E., & Parente, R. (2021). Segmenting "digital investors": evidence from the Italian equity crowdfunding market. *Small Business Economics*, *56*(3), 1235–1250. https://doi.org/10.1007/s11187-019-00265-3

Ferguson, R., Schattke, K., & Paulin, M. (2016). The social context for value co-creations in an entrepreneurial network. *International Journal of Entrepreneurial Behavior & Research*, *22*(2), 199–214. https://doi.org/10.1108/IJEBR-04-2015-0100

Fernández-Vázquez, J.-S., & Álvarez-Delgado, R.-C. (2020). The interaction between rational arguments and emotional appeals in the entrepreneurial pitch. *International Journal of Entrepreneurial Behaviour and Research*, *26*(3), 503–520. https://doi.org/10.1108/IJEBR-06-2019-0334

Ferrati, F., & Muffatto, M. (2020). Using Crunchbase for Research in Entrepreneurship: Data Content and Structure. *19th European Conference on Research Methodology for Business and Management Studies*.

Ferrati, F., & Muffatto, M. (2021). Reviewing equity investors' funding criteria: a comprehensive classification and research agenda. *Venture Capital*, *23*(2), 157–178. https://doi.org/10.1080/13691066.2021.1883211

Fietkiewicz, K. J., Hoffmann, C., & Lins, E. (2018). Find the perfect match: the interplay among Facebook, YouTube and LinkedIn on crowdfunding success. *International Journal of Entrepreneurship and Small Business*, *33*(4), Article 10011203, 472-493. https://doi.org/10.1504/IJESB.2018.10011203

Fili, A. (2014). Business angel–venture negotiation in the post-investment relationship: the use of the good cop, bad cop strategy. *Venture Capital*, *16*(4), 309–325. https://doi.org/10.1080/13691066.2014.974884

Fisch, C. (2019). Initial coin offerings (ICOs) to finance new ventures. *Journal of Business Venturing*, *34*(1), 1–22. https://doi.org/10.1016/j.jbusvent.2018.09.007

Fisch, C., & Block, J. (2018). Six tips for your (systematic) literature review in business and management research. *Management Review Quarterly*, *68*(2), 103–106. https://doi.org/10.1007/s11301-018-0142-x

Fisch, C., & Block, J. (2021). How does entrepreneurial failure change an entrepreneur's digital identity? Evidence from Twitter data. *Journal of Business Venturing*, *36*(1), 106015. https://doi.org/10.1016/j.jbusvent.2020.106015

Fischer, E., & Reuber, A. R. (2014). Online entrepreneurial communication: Mitigating uncertainty and increasing differentiation via Twitter. *Journal of Business Venturing*, *29*(4), 565–583. https://doi.org/10.1016/j.jbusvent.2014.02.004

Fletcher, D. (2007). 'toy Story': The narrative world of entrepreneurship and the creation of interpretive communities. *Journal of Business Venturing*, *22*(5), 649–672. https://doi.org/10.1016/j.jbusvent.2006.10.001

Foo, M.-D. (2011). Emotions and Entrepreneurial Opportunity Evaluation. *Entrepreneurship Theory and Practice*, *35*(2), 375–393. https://doi.org/10.1111/j.1540-6520.2009.00357.x

Forliano, C., Bernardi, P. de, & Yahiaoui, D. (2021). Entrepreneurial universities: A bibliometric analysis within the business and management domains. *Technological Forecasting and Social Change*, *165*, 120522. https://doi.org/10.1016/j.techfore.2020.120522

Franić, S., & Drnovšek, M. (2019). The role of regulatory focus and cognitive style in business angels' evaluation of an investment opportunity. *Venture Capital*, *21*(4), 353–377. https://doi.org/10.1080/13691066.2019.1599191

Fried, V. H., & Hisrich, R. D. (1994). Toward a Model of Venture Capital Investment Decision Making. *Financial Management*, *23*(3), 28. https://doi.org/10.2307/3665619

Gafni, H., Marom, D., & 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), 3–23. https://doi.org/10.1002/sej.1293

Garfield, E. (2004). Historiographic Mapping of Knowledge Domains Literature. *Journal of Information Science*, *30*(2), 119–145. https://doi.org/10.1177/0165551504042802

Gartner, W. B. (2007). Entrepreneurial narrative and a science of the imagination. *Journal of Business Venturing*, *22*(5), 613–627. https://doi.org/10.1016/j.jbusvent.2006.10.003

Gartner, W. B. (2010). A new path to the waterfall: A narrative on a use of entrepreneurial narrative. *International Small Business Journal: Researching Entrepreneurship*, *28*(1), 6–19. https://doi.org/10.1177/0266242609351448

Garud, R., Gehman, J., & Giuliani, A. P. (2014a). Contextualizing entrepreneurial innovation: A narrative perspective. *Research Policy*, *43*(7), 1177–1188. https://doi.org/10.1016/j.respol.2014.04.015

Garud, R., Schildt, H. A., & Lant, T. K. (2014b). Entrepreneurial storytelling, future expectations, and the paradox of legitimacy. *Organization Science*, *25*(5), 1479–1492. https://doi.org/10.1287/orsc.2014.0915

Gassenheimer, J. B., Baucus, D. B., & Baucus, M. S. (1996). Cooperative arrangements among entrepreneurs: An analysis of opportunism and communication in franchise structures. *Journal of Business Research*, *36*(1), 67–79. https://doi.org/10.1016/0148-2963(95)00164-6

George, G. (2005). Slack Resources and the Performance of Privately Held Firms. *Academy of Management Journal. Academy of Management*, *48*(4), 661–676. https://doi.org/10.5465/AMJ.2005.17843944

Gerber, E. M., & Hui, J. (2013). Crowdfunding: motivations and deterrents for participation. *ACM Transactions on Computer-Human Interaction*, *20*(6), 1–32. https://doi.org/10.1145/2530540

Ghura, A. S., Sharma, G. D., Pereira, V., Islam, N., & Chopra, R. (2022). Corporate entrepreneurship champions: mapping the past and present states of the field for future advancements. *International Journal of Entrepreneurial Behaviour and Research*, *28*(8), 2151–2181. https://doi.org/10.1108/IJEBR-09-2021-0758

Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., & Brinckmann, J. (2020). Revising entrepreneurial action in response to exogenous shocks: Considering the COVID-19 pandemic. *Journal of Business Venturing Insights*, *14*, e00186. https://doi.org/10.1016/j.jbvi.2020.e00186

Gloor, P. A., Fronzetti Colladon, A., Grippa, F., Hadley, B. M., & Woerner, S. (2020). The impact of social media presence and board member composition on new venture success: Evidences from VC-backed U.S. startups. *Technological Forecasting and Social Change*, *157*, 120098. https://doi.org/10.1016/j.techfore.2020.120098

Godulla, A., & Men, L. R. (2022). Start-up and Entrepreneurial Communication. *International Journal of Strategic Communication*, *16*(2), 127–133. https://doi.org/10.1080/1553118X.2022.2040165

Goffman, E. (1959). *The presentation of self in everyday life.*

Goleman, D. (2012). *Emotional Intelligence: Why It Can Matter More Than IQ* (10th ed.). Random House Publishing Group.

Gompers, P., & Lerner, J. (2000). Money chasing deals? The impact of fund inflows on private equity valuations. *Journal of Financial Economics*, *55*(2), 281–325. https://doi.org/10.1016/S0304-405X(99)00052-5

Gompers, P., & Lerner, J. (2001). The Venture Capital Revolution. *Journal of Economic Perspectives*, *15*(2), 145–168. https://doi.org/10.1257/jep.15.2.145

Gompers, P., Gornall, W., Kaplan, S., & Strebulaev, I. (2020a). *Venture Capitalists and COVID-19*. Cambridge, MA. https://doi.org/10.3386/w27824

Gompers, P. A., Gornall, W., Kaplan, S. N., & Strebulaev, I. A. (2020b). How do venture capitalists make decisions? *Journal of Financial Economics*, *135*(1), 169–190. https://doi.org/10.1016/j.jfineco.2019.06.011

Gossel, B. M. (2022). Analogies in Entrepreneurial Communication and Strategic Communication: Definition, Delimitation of Research Programs and Future Research. *International Journal of Strategic Communication*, *16*(2), 134–156. https://doi.org/10.1080/1553118X.2021.2015689

Granz, C., Henn, M., & Lutz, E. (2020). Research on Venture Capitalists' and Business Angels' Investment Criteria: A Systematic Literature Review. In A. Moritz, J. H. Block, S. Golla, & A. Werner (Eds.), *FGF Studies in Small Business and Entrepreneurship. Contemporary Developments in Entrepreneurial Finance* (pp. 105–136). Springer International Publishing. https://doi.org/10.1007/978-3-030-17612-9_5

Gray, D., Davies, F., & Blanchard, K. (2004). Does use of public relations promote a higher growth rate in small firms? *Corporate Communications*, *9*(4), 294–301. https://doi.org/10.1108/13563280410564039

Gruber, M. (2003). Research on marketing in emerging firms: key issues and open questions. *International Journal of Technology Management*, *26*(5/6), Article 3425, 600. https://doi.org/10.1504/IJTM.2003.003425

Guenther, C., Johan, S., & Schweizer, D. (2018). Is the crowd sensitive to distance?—how investment decisions differ by investor type. *Small Business Economics*, *50*(2), 289–305. https://doi.org/10.1007/s11187-016-9834-6

Gulati, R., & Sytch, M. (2008). Does familiarity breed trust? Revisiting the antecedents of trust. *Managerial and Decision Economics*, *29*(2-3), 165–190. https://doi.org/10.1002/mde.1396

Hain, D., Johan, S., & Wang, D. (2016). Determinants of Cross-Border Venture Capital Investments in Emerging and Developed Economies: The Effects of Relational and

Institutional Trust. *Journal of Business Ethics*, *138*(4), 743–764. https://doi.org/10.1007/s10551-015-2772-4

Haiyan, L. (2019). Dynamic trust game model between venture capitalists and entrepreneurs based on reinforcement learning theory. *Cluster Computing*, *22*(S3), 5893–5904. https://doi.org/10.1007/s10586-017-1666-x

Hamilton, E. (2014). Entrepreneurial narrative identity and gender: A double epistemological shift. *Journal of Small Business Management*, *52*(4), 703–712. https://doi.org/10.1111/jsbm.12127

Han, S., Lerner, J. S., & Keltner, D. (2007). Feelings and Consumer Decision Making: The Appraisal-Tendency Framework. *Journal of Consumer Psychology*, *17*(3), 158–168. https://doi.org/10.1016/S1057-7408(07)70023-2

Harmeling, S. S. (2011). Re-storying an entrepreneurial identity: Education, experience and self-narrative. *Education and Training*, *53*(8), 741–749. https://doi.org/10.1108/00400911111185053

Harrison, R., Li, Y., Vigne, S. A., & Wu, Y. (2022). Why do small businesses have difficulty in accessing bank financing? *International Review of Financial Analysis*, *84*, 102352. https://doi.org/10.1016/j.irfa.2022.102352

Harrison, R. T., Dibben, M. R., & Mason, C. M. (1997). The Role of Trust in the Informal Investor's Investment Decision: An Exploratory Analysis. *Entrepreneurship Theory and Practice*, *21*(4), 63–81. https://doi.org/10.1177/104225879702100405

Hastings, S. O., & Payne, H. J. (2013). Expressions of Dissent in Email: Qualitative Insights Into Uses and Meanings of Organizational Dissent. *International Journal of Business Communication*, *50*(3), 309–331. https://doi.org/10.1177/0021943613487071

Hellmann, T., & Puri, M. (2002). Venture Capital and the Professionalization of Start-Up Firms: Empirical Evidence. *The Journal of Finance*, *57*(1), 169–197. https://doi.org/10.1111/1540-6261.00419

Hellmann, T. F., Schure, P., & Vo, D. (2019). Angels and Venture Capitalists: Substitutes or Complements? *SSRN Electronic Journal*. Advance online publication. https://doi.org/10.2139/ssrn.2602739

Hill, R. C., & Levenhagen, M. (1995). Metaphors and Mental Models: Sensemaking and Sensegiving in Innovative and Entrepreneurial Activities. *Journal of Management*, *21*(6), 1057–1074. https://doi.org/10.1177/014920639502100603

Hills, G. E., Hultman, C. M., & Miles, M. P. (2008). The Evolution and Development of Entrepreneurial Marketing. *Journal of Small Business Management*, *46*(1), 99–112. https://doi.org/10.1111/j.1540-627X.2007.00234.x

Hinderer, S., Brändle, L., & Kuckertz, A. (2021). Transition to a sustainable bioeconomy. Sustainability. 13:8232. https://doi.org/10.3390/su13158232

Hinderer, S., & Kuckertz, A. (2022). The bioeconomy transformation as an external enabler of sustainable entrepreneurship. *Business Strategy and the Environment*, *31*(7), 2947–2963. https://doi.org/10.1002/bse.3056

Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids — Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing*, *25*(5), 481–492. https://doi.org/10.1016/j.jbusvent.2009.07.005

Hoffmann, C., & Fieseler, C. (2012). Investor relations beyond financials. *Corporate Communications: An International Journal*, *17*(2), 138–155. https://doi.org/10.1108/13563281211220265

Hoffmann, C. P. (2018). Investor Relations Communication. In R. L. Heath & W. Johansen (Eds.), *The International Encyclopedia of Strategic Communication* (pp. 1–11). Wiley. https://doi.org/10.1002/9781119010722.iesc0094

Hoffmann, C. P., Tietz, S., & Hammann, K. (2018). Investor relations – a systematic literature review. *Corporate Communications: An International Journal*, *23*(3), 294–311. https://doi.org/10.1108/CCIJ-05-2017-0050

Holt, R., & Macpherson, A. (2010). Sensemaking, rhetoric and the socially competent entrepreneur. *International Small Business Journal: Researching Entrepreneurship*, *28*(1), 20–42. https://doi.org/10.1177/0266242609350822

Howorth, C., & Moro, A. (2006). Trust within Entrepreneur Bank Relationships: Insights from Italy. *Entrepreneurship Theory and Practice*, *30*(4), 495–517. https://doi.org/10.1111/j.1540-6520.2006.00132.x

Huang, L. (2018). The Role of Investor Gut Feel in Managing Complexity and Extreme Risk. *Academy of Management Journal. Academy of Management*, *61*(5), 1821–1847. https://doi.org/10.5465/amj.2016.1009

Huang, L., & Pearce, J. L. (2015). Managing the Unknowable. *Administrative Science Quarterly*, *60*(4), 634–670. https://doi.org/10.1177/0001839215597270

Huang, L., & Knight, A. P. (2017). Resources and Relationships in Entrepreneurship: An Exchange Theory of the Development and Effects of the Entrepreneur-Investor

Relationship. *Academy of Management Review*, *42*(1), 80–102. https://doi.org/10.5465/amr.2014.0397

Huang, W., Meoli, M., & Vismara, S. (2020). The geography of initial coin offerings. *Small Business Economics*, *55*(1), 77–102. https://doi.org/10.1007/s11187-019-00135-y

Huang-Horowitz, N. C., & Evans, S. K. (2020). Communicating Organizational Identity as Part of the Legitimation Process: A Case Study of Small Firms in an Emerging Field. *International Journal of Business Communication*, *57*(3), 327–351. https://doi.org/10.1177/2329488417696726

Invest Europe. (2022, January 24). *Fundraising | Invest Europe*. https://www.investeurope.eu/research/activity-data/fundraising/

Jing, G. U., Hao, C., & Xian, Z. (2013). Influence of Psychological and Emotional Factors on the Venture Enterprise Value and the Investment Decision-Making. *Procedia Computer Science*, *17*, 919–929. https://doi.org/10.1016/j.procs.2013.05.117

Johnson, M. P., & Schaltegger, S. (2020). Entrepreneurship for Sustainable Development: A Review and Multilevel Causal Mechanism Framework. *Entrepreneurship: Theory and Practice*, *44*(6), 1141–1173. https://doi.org/10.1177/1042258719885368

Jones, N. N. (2017). Rhetorical Narratives of Black Entrepreneurs: The Business of Race, Agency, and Cultural Empowerment. *Journal of Business and Technical Communication*, *31*(3), 319–349. https://doi.org/10.1177/1050651917695540

Kaiser, M., & Berger, E. S. C. (2021). Trust in the investor relationship marketing of startups: a systematic literature review and research agenda. *Management Review Quarterly*, *71*(2), 491–517. https://doi.org/10.1007/s11301-020-00191-9

Kaiser, M., & Kuckertz, A. (2023a). Bibliometrically mapping the research field of entrepreneurial communication: where we stand and where we need to go. *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00355-3 (in press)

Kaiser, M., & Kuckertz, A. (2023b). Emotional robustness in times of crisis: the effects of venture funding on the digital communication styles of entrepreneurs. *Journal of Small Business and Enterprise Development*. https://doi.org/10.1108/JSBED-10-2022-0423 (in press)

Kalantari, A., Kamsin, A., Kamaruddin, H. S., Ale Ebrahim, N., Gani, A., Ebrahimi, & A., Shamshirband, S. (2017). A bibliometric approach to tracking big data research trends. *Journal of Big Data* 4(30), 1-18. https://doi.org/10.1186/s40537-017-0088-1

Kang, M., Gao, Y., Wang, T., & Zheng, H. (2016). Understanding the determinants of funders' investment intentions on crowdfunding platforms. *Industrial Management & Data Systems*, *116*(8), 1800–1819. https://doi.org/10.1108/IMDS-07-2015-0312

Kim, M. J., Bonn, M., & Lee, C.-K. (2020). The effects of motivation, deterrents, trust, and risk on tourism crowdfunding behavior. *Asia Pacific Journal of Tourism Research*, *25*(3), 244–260. https://doi.org/10.1080/10941665.2019.1687533

Klabunde, A. (2016). How much should an investor trust the startup entrepreneur? A network model. *Journal of Economic Interaction and Coordination*, *11*(2), 293–312. https://doi.org/10.1007/s11403-015-0147-7

Köhn, A. (2018). The determinants of startup valuation in the venture capital context: a systematic review and avenues for future research. *Management Review Quarterly*, *68*(1), 3–36. https://doi.org/10.1007/s11301-017-0131-5

Kollmann, T., & Kuckertz, A. (2006). Investor relations for start-ups: An analysis of venture capital investors' communicative needs. *International Journal of Technology Management*, *34*(1-2), 47–62. https://doi.org/10.1504/IJTM.2006.009447

Kollmann, T., Kuckertz, A., & Middelberg, N. (2014). Trust and controllability in venture capital fundraising. *Journal of Business Research*, *67*(11), 2411–2418. https://doi.org/10.1016/j.jbusres.2014.02.008

Kostis, A., & Näsholm, M. H. (2020). Towards a research agenda on how, when and why trust and distrust matter to coopetition. *Journal of Trust Research*, *10*(1), 66–90. https://doi.org/10.1080/21515581.2019.1692664

Kraus, S., Harms, R., & Fink, M. (2010). Entrepreneurial marketing: moving beyond marketing in new ventures. *International Journal of Entrepreneurship and Innovation Management*, *11*(1), Article 29766, 19. https://doi.org/10.1504/IJEIM.2010.029766

Kraus, S., Filser, M., O'Dwyer, M., & Shaw, E. (2014) Social Entrepreneurship: An exploratory citation analysis. *Review of Managerial Science*, 8, 275–292. https://doi.org/10.1007/s11846-013-0104-6

Kraus, S., Clauss, T., Breier, M., Gast, J., Zardini, A., & Tiberius, V. (2020). The economics of COVID-19: initial empirical evidence on how family firms in five European countries cope with the corona crisis. *International Journal of Entrepreneurial Behavior & Research*, *26*(5), 1067–1092. https://doi.org/10.1108/IJEBR-04-2020-0214

Kraus, S., Mahto, R. V., & Walsh, S. T. (2021). The importance of literature reviews in small business and entrepreneurship research. *Journal of Small Business Management*, 1–12. https://doi.org/10.1080/00472778.2021.1955128

Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C. A., Prochotta, A., Steinbrink, K. M., & Berger, E. S. (2020). Startups in times of crisis – A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, *13*, e00169. https://doi.org/10.1016/j.jbvi.2020.e00169

Kuckertz, A. (2021). Standing up against crisis-induced entrepreneurial uncertainty: Fewer teams, more habitual entrepreneurs. *International Small Business Journal: Researching Entrepreneurship*, *39*(3), 191–201. https://doi.org/10.1177/0266242621997782

Kuckertz, A., & Block, J. (2021). Reviewing systematic literature reviews: ten key questions and criteria for reviewers. *Management Review Quarterly*, *71*(3), 519–524. https://doi.org/10.1007/s11301-021-00228-7

Kuckertz, A., & Brändle, L. (2021). Creative reconstruction: a structured literature review of the early empirical research on the COVID-19 crisis and entrepreneurship. *Management Review Quarterly.* Advance online publication. https://doi.org/10.1007/s11301-021-00221-0

Lakeman, F. A., Walter, N., & Cleff, T. (2021). The impact of payment methods and payment-related marketing communications on e-commerce retailer trust – an empirical consumer analysis of Indonesian e-commerce start-ups. *International Journal of Electronic Business*, *16*(4), 352–376. https://doi.org/10.1504/IJEB.2021.118492

Large, D., & Muegge, S. (2008). Venture capitalists' non-financial value-added: an evaluation of the evidence and implications for research. *Venture Capital*, *10*(1), 21–53. https://doi.org/10.1080/13691060701605488

Laskin, A. V. (2009). A Descriptive Account of the Investor Relations Profession: A National Study. *Journal of Business Communication*, *46*(2), 208–233. https://doi.org/10.1177/0021943608328078

Lee, J. M., Hwang, B.-H., & Chen, H. (2017). Are founder CEOs more overconfident than professional CEOs? Evidence from S&P 1500 companies. *Strategic Management Journal*, *38*(3), 751–769. https://doi.org/10.1002/smj.2519

Leetaru, K. (2019, April 24). *A Fading Twitter Changes Its User Metrics Once Again*. https://www.forbes.com/sites/kalevleetaru/2019/04/23/a-fading-twitter-changes-its-user-metrics-once-again/?sh=dbc571f7a31e [Last access May 2, 2023]

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & Emotion*, *14*(4), 473–493. https://doi.org/10.1080/026999300402763

Levie, J., & Gimmon, E. (2008). Mixed signals: why investors may misjudge first time high technology venture founders. *Venture Capital*, *10*(3), 233–256. https://doi.org/10.1080/13691060802151820

Liu, X. (2020). Analyzing the impact of user-generated content on B2B Firms' stock performance: Big data analysis with machine learning methods. *Industrial Marketing Management*, *86*, 30–39. https://doi.org/10.1016/j.indmarman.2019.02.021

LIWC. (2021). *Where do the numbers come from? How are they calculated?* https://liwc.wpengine.com/interpreting-liwc-output/ [Retrieved April 30, 2021]

LIWC. (2023). *LIWC — LIWC Analysis*. https://www.liwc.app/help/liwc [Retrieved May 2, 2023]

Lortie, J., Cox, K. C., & Roundy, P. T. (2022). Social impact models, legitimacy perceptions, and consumer responses to social ventures. *Journal of Business Research*, *144*, 312–321. https://doi.org/10.1016/j.jbusres.2022.01.079

Lucas, K., Kerrick, S. A., Haugen, J., & Crider, C. J. (2016). Communicating entrepreneurial passion: Personal Passion vs. Perceived Passion in venture pitches. *IEEE Transactions on Professional Communication*, *59*(4), 363–378. https://doi.org/10.1109/TPC.2016.2607818

Manning, P., Stokes, P., Tarba, S. Y., & Rodgers, P. (2020). Entrepreneurial stories, narratives and reading – Their role in building entrepreneurial being and behaviour. *International Journal of Entrepreneurship and Innovation*, *21*(3), 178–190. https://doi.org/10.1177/1465750319889234

Manning, S., & Bejarano, T. A. (2017). Convincing the crowd: Entrepreneurial storytelling in crowdfunding campaigns. *Strategic Organization*, *15*(2), 194–219. https://doi.org/10.1177/1476127016648500

Mantere, S., Aula, P., Schildt, H., & Vaara, E. (2013). Narrative attributions of entrepreneurial failure. *Journal of Business Venturing*, *28*(4), 459–473. https://doi.org/10.1016/j.jbusvent.2012.12.001

Mara, A. (2008). Ethos as market maker: The creative role of technical marketing communication in an aviation start-up. *Journal of Business and Technical Communication*, *22*(4), 429–453. https://doi.org/10.1177/1050651908320379

Martens, M. L., Jennings, J. E., & 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), 1107–1132. https://doi.org/10.5465/AMJ.2007.27169488

Martin, D. M. (2009). The entrepreneurial marketing mix. *Qualitative Market Research, 12*(4), 391–403. https://doi.org/10.1108/13522750910993310

Mason, C., & Stark, M. (2004). What do Investors Look for in a Business Plan? *International Small Business Journal: Researching Entrepreneurship*, *22*(3), 227–248. https://doi.org/10.1177/0266242604042377

Maxwell, A. L., Jeffrey, S. A., & Lévesque, M. (2011). Business angel early stage decision making. *Journal of Business Venturing*, *26*(2), 212–225. https://doi.org/10.1016/j.jbusvent.2009.09.002

Maxwell, A. L., & Lévesque, M. (2014). Trustworthiness: A Critical Ingredient for Entrepreneurs Seeking Investors. *Entrepreneurship Theory and Practice*, *38*(5), 1057–1080. https://doi.org/10.1111/j.1540-6520.2011.00475.x

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *Academy of Management Review*, *20*(3), 709. https://doi.org/10.2307/258792

Men, L. R. (2021). The impact of startup CEO communication on employee relational and behavioral outcomes: Responsiveness, assertiveness, and authenticity. *Public Relations Review*, *47*(4). https://doi.org/10.1016/j.pubrev.2021.102078

Men, L. R., Chen, Z. F., & Ji, Y. G. (2018). Walking the talk: An exploratory examination of executive leadership communication at startups in China. *Journal of Public Relations Research*, *30*(1-2), 35–56. https://doi.org/10.1080/1062726X.2018.1455147

Men, L. R., Chen, Z. F., & Ji, Y. G. (2021a). Cultivating Relationships with Startup Employees: The Role of Entrepreneurs' Leadership Communication. *Management Communication Quarterly*, *35*(4), 518–545. https://doi.org/10.1177/08933189211017918

Men, L. R., Qin, Y. S., & Mitson, R. (2021b). Engaging Startup Employees via Charismatic Leadership Communication: The Importance of Communicating "Vision, Passion, and Care". *International Journal of Business Communication.* Advance online publication. https://doi.org/10.1177/23294884211020488

Meurer, M. M., Waldkirch, M., Schou, P. K., Bucher, E. L., & Burmeister-Lamp, K. (2022). Digital affordances: how entrepreneurs access support in online communities during the COVID-19 pandemic. *Small Business Economics*, *58*(2), 637–663. https://doi.org/10.1007/s11187-021-00540-2

Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift Trust and Temporary Groups. In *Trust in Organizations: Frontiers of Theory and Research* (pp. 166–195). SAGE Publications, Inc. https://doi.org/10.4135/9781452243610.n9

Michler, O., Decker, R., & Stummer, C. (2020). To trust or not to trust smart consumer products: a literature review of trust-building factors. *Management Review Quarterly*, *70*(3), 391–420. https://doi.org/10.1007/s11301-019-00171-8

Middelhoff, J., Mauer, R., & Brettel, M. (2014). Antecedents of entrepreneurs' trust in their investor in the postinvestment phase – do something good! *Venture Capital*, *16*(4), 327–347. https://doi.org/10.1080/13691066.2014.988381

Miklian, J., & Hoelscher, K. (2022). SMEs and exogenous shocks: A conceptual literature review and forward research agenda. *International Small Business Journal: Researching Entrepreneurship*, *40*(2), 178–204. https://doi.org/10.1177/02662426211050796

Mitteness, C., Sudek, R., & 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), 592–606. https://doi.org/10.1016/j.jbusvent.2011.11.003

Mochkabadi, K., & Volkmann, C. K. (2020). Equity crowdfunding: a systematic review of the literature. *Small Business Economics*, *54*(1), 75–118. https://doi.org/10.1007/s11187-018-0081-x

Mohammad, S. M., & Turney, P. D. (2013). Crowdsourcing a word-emotion association lexicon. *Computational Intelligence*, *29*(3), 436–465. https://doi.org/10.1111/j.1467-8640.2012.00460.x

Möllering, G. (2019). Putting a spotlight on the trustor in trust research. *Journal of Trust Research*, *9*(2), 131–135. https://doi.org/10.1080/21515581.2019.1678853

Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, *29*(1), 1–16. https://doi.org/10.1016/j.jbusvent.2013.06.005

Moorman, C., Zaltman, G., & Deshpande, R. (1992). Relationships between Providers and Users of Market Research: The Dynamics of Trust within and between Organizations. *Journal of Marketing Research*, *29*(3), 314. https://doi.org/10.2307/3172742

Morawetz, C., Alexandrowicz, R. W., & Heekeren, H. R. (2017). Successful emotion regulation is predicted by amygdala activity and aspects of personality: A latent variable approach. *Emotion (Washington, D.C.)*, *17*(3), 421–441. https://doi.org/10.1037/emo0000215

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, *58*(3), 20. https://doi.org/10.2307/1252308

Moritz, A., & Block, J. (2022). Editorial to the special issue "Structured Literature Reviews in Entrepreneurship Research-Taking Stock and Setting the Agenda". *Management Review Quarterly*, *72*(2), 275–279. https://doi.org/10.1007/s11301-022-00265-w

Moritz, A., Block, J., & Heinz, A. (2016). Financing patterns of European SMEs – an empirical taxonomy. *Venture Capital*, *18*(2), 115–148. https://doi.org/10.1080/13691066.2016.1145900

Moritz, A., Block, J., & Lutz, E. (2015). Investor communication in equity-based crowdfunding: a qualitative-empirical study. *Qualitative Research in Financial Markets*, *7*(3), 309–342. https://doi.org/10.1108/QRFM-07-2014-0021

Moro, A., Fink, M., Maresch, D., & Fredriksson, A. (2017). Loan managers' decisions and trust in entrepreneurs in different institutional contexts. *Entrepreneurship & Regional Development*, *30*(1-2), 146–172. https://doi.org/10.1080/08985626.2017.1400115

Morris, M. H., & Paul, G. W. (1987). The relationship between entrepreneurship and marketing in established firms. *Journal of Business Venturing*, *2*(3), 247–259. https://doi.org/10.1016/0883-9026(87)90012-7

Moss, T. W., Renko, M., Block, E., & Meyskens, M. (2018). Funding the story of hybrid ventures: Crowdfunder lending preferences and linguistic hybridity. *Journal of Business Venturing*, *33*(5), 643–659. https://doi.org/10.1016/j.jbusvent.2017.12.004

Most, F., Conejo, F. J., & Cunningham, L. F. (2018). Bridging past and present entrepreneurial marketing research. *Journal of Research in Marketing and Entrepreneurship*, *20*(2), 229–251. https://doi.org/10.1108/JRME-11-2017-0049

Mumi, A., Obal, M., & Yang, Y. (2019). Investigating social media as a firm's signaling strategy through an IPO. *Small Business Economics*, *53*(3), 631–645. https://doi.org/10.1007/s11187-018-0066-9

Muñoz, P., & Cohen, B. (2018). Entrepreneurial Narratives in Sustainable Venturing: Beyond People, Profit, and Planet. *Journal of Small Business Management*, *56*, 154–176. https://doi.org/10.1111/jsbm.12395

Murray, G. C., & Marriott, R. (1998). Why has the investment performance of technology-specialist, European venture capital funds been so poor? *Research Policy*, *27*(9), 947–976. https://doi.org/10.1016/S0048-7333(98)00102-4

Nagy, B. G., Pollack, J. M., Rutherford, M. W., & Lohrke, F. T. (2012). The influence of entrepreneurs' credentials and impression management behaviors on perceptions of new venture legitimacy. *Entrepreneurship: Theory and Practice*, *36*(5), 941–965. https://doi.org/10.1111/j.1540-6520.2012.00539.x

National Investor Relations Institute. (2023). *NIRI - About NIRI*. https://www.niri.org/about-niri [Retrieved May 2, 2023]

National Venture Capital Association (2021). NVCA-2021-Yearbook. https://nvca.org/wp-content/uploads/2021/03/NVCA-2021-Yearbook.pdf [Retrieved May 2, 2023]

Obschonka, M., & Audretsch, D. B. (2020). Artificial intelligence and big data in entrepreneurship: a new era has begun. *Small Business Economics*, *55*(3), 529–539. https://doi.org/10.1007/s11187-019-00202-4

Obschonka, M., & Fisch, C. (2018). Entrepreneurial personalities in political leadership. *Small Business Economics*, *50*(4), 851–869. https://doi.org/10.1007/s11187-017-9901-7

Obschonka, M., Fisch, C., & Boyd, R. (2017). Using digital footprints in entrepreneurship research: A Twitter-based personality analysis of superstar entrepreneurs and managers. *Journal of Business Venturing Insights*, *8*, 13–23. https://doi.org/10.1016/j.jbvi.2017.05.005

Olanrewaju, A.-S. T., Hossain, M. A., Whiteside, N., & Mercieca, P. (2020). Social media and entrepreneurship research: A literature review. *International Journal of Information Management*, *50*, 90–110. https://doi.org/10.1016/j.ijinfomgt.2019.05.011

Olsen, R. A. (2008). Trust as risk and the foundation of investment value. *The Journal of Socio-Economics*, *37*(6), 2189–2200. https://doi.org/10.1016/j.socec.2008.04.009

Padilla, A. J., & Pagano, M. (1997). Endogenous communication among lenders and entrepreneurial incentives. *Review of Financial Studies*, *10*(1), 205–236. https://doi.org/10.1093/rfs/10.1.205

Paul, S., Whittam, G., & Wyper, J. (2007. Towards a model of the business angel investment process. *Venture Capital*, 9(2),107–125. https://doi.org/10.1080/13691060601185425

Pakura, S., Rudeloff, C., Bekmeier-Feuerhahn, S., & Eggers, F. (2020). Communication management of start-ups: An empirical analysis of entrepreneurs' communication and networking success on Facebook. *International Journal of Entrepreneurial Venturing*, *12*(5), 459–489. https://doi.org/10.1504/IJEV.2020.111538

Palmatier, R. W., Dant, R. P., Grewal, D., & Evans, K. R. (2006). Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis. *Journal of Marketing*, *70*(4), 136–153. https://doi.org/10.1509/jmkg.70.4.136

Panda, S., & Dash, S. (2016). Exploring the venture capitalist – entrepreneur relationship: evidence from India. *Journal of Small Business and Enterprise Development*, *23*(1), 64–89. https://doi.org/10.1108/JSBED-05-2013-0071

Parhankangas, A., & Ehrlich, M. (2014). How entrepreneurs seduce business angels: An impression management approach. *Journal of Business Venturing*, *29*(4), 543–564. https://doi.org/10.1016/j.jbusvent.2013.08.001

Park, S.-Y., & Loo, B. T. (2022). The Use of Crowdfunding and Social Media Platforms in Strategic Start-up Communication: A Big-data Analysis. *International Journal of Strategic Communication*, *16*(2), 313–331. https://doi.org/10.1080/1553118X.2022.2032079

Pellegrini, M. M., Rialti, R., Marzi, G., & Caputo, A. (2020). Sport entrepreneurship: A synthesis of existing literature and future perspectives. *International Entrepreneurship and Management Journal*, *16*(3), 795–826. https://doi.org/10.1007/s11365-020-00650-5

Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). *The Development and Psychometric Properties of LIWC2015*. https://doi.org/10.15781/T29G6Z

Plutchnik, R. (1980). A general psychoevolutionary theory of emotion. In *Theories of Emotion* (pp. 3–33). Elsevier. https://doi.org/10.1016/B978-0-12-558701-3.50007-7

Podsakoff, P. M., MacKenzie, S. B., Bachrach, D. G., & Podsakoff, N. P. (2005). The influence of management journals in the 1980s and 1990s. *Strategic Management Journal*, *26*(5), 473–488. https://doi.org/10.1002/smj.454

Pollack, J. M., Rutherford, M. W., & Nagy, B. G. (2012). Preparedness and cognitive legitimacy as antecedents of new venture funding in televised business pitches. *Entrepreneurship: Theory and Practice*, *36*(5), 915–939. https://doi.org/10.1111/j.1540-6520.2012.00531.x

Pollack, J. M., Barr, S., & Hanson, S. (2017). New venture creation as establishing stakeholder relationships: A trust-based perspective. *Journal of Business Venturing Insights*, *7*, 15–20. https://doi.org/10.1016/j.jbvi.2016.12.003

Prietzel, T. T. (2020). The effect of emotion on risky decision making in the context of prospect theory: a comprehensive literature review. *Management Review Quarterly*, *70*(3), 313–353. https://doi.org/10.1007/s11301-019-00169-2

Prüfer, J., & Prüfer, P. (2020). Data science for entrepreneurship research: studying demand dynamics for entrepreneurial skills in the Netherlands. *Small Business Economics*, *55*(3), 651–672. https://doi.org/10.1007/s11187-019-00208-y

Rae, D. (2005). Entrepreneurial learning: A narrative-based conceptual model. *Journal of Small Business and Enterprise Development*, *12*(3), 323–335. https://doi.org/10.1108/14626000510612259

Ratten, V. (2020). Coronavirus and international business: An entrepreneurial ecosystem perspective. *Thunderbird International Business Review*, *62*(5), 629–634. https://doi.org/10.1002/tie.22161

Ratten, V. (2021). COVID -19 and entrepreneurship: Future research directions. *Strategic Change*, *30*(2), 91–98. https://doi.org/10.1002/jsc.2392

Retterath, A. (2020a). Human Versus Computer: Benchmarking Venture Capitalists and Machine Learning Algorithms for Investment Screening. *SSRN Electronic Journal*. Advance online publication. https://doi.org/10.2139/ssrn.3706119

Retterath, A. (2020b). *Essays on Machine Learning and the Value of Data in Venture Capital*. https://mediatum.ub.tum.de/doc/1574989/document.pdf

Rode, V., & Vallaster, C. (2005). Corporate Branding for Start-ups: The Crucial Role of Entrepreneurs. *Corporate Reputation Review*, *8*(2), 121–135. https://doi.org/10.1057/palgrave.crr.1540244

Röhm, P., Köhn, A., Kuckertz, A., & Dehnen, H. S. (2018). A world of difference? The impact of corporate venture capitalists' investment motivation on startup valuation. *Journal of Business Economics*, *88*(3-4), 531–557. https://doi.org/10.1007/s11573-017-0857-5

Röhm, P., & Kuckertz, A.. (2020). Playing with the Devil? Organizational Voids within Corporate Venture Capital Dyads. In A. Moritz, J. H. Block, S. Golla, & A. Werner (Eds.), *FGF Studies in Small Business and Entrepreneurship. Contemporary Developments in Entrepreneurial Finance* (pp. 229–247). Springer International Publishing. https://doi.org/10.1007/978-3-030-17612-9_9

Rosenbusch, N., Brinckmann, J., & Müller, V. (2013). Does acquiring venture capital pay off for the funded firms? A meta-analysis on the relationship between venture capital investment and funded firm financial performance. *Journal of Business Venturing*, *28*(3), 335–353. https://doi.org/10.1016/j.jbusvent.2012.04.002

Roundy, P. T. (2016). Start-up Community Narratives: The Discursive Construction of Entrepreneurial Ecosystems. *Journal of Entrepreneurship*, *25*(2), 232–248. https://doi.org/10.1177/0971355716650373

Roundy, P. T., & Bayer, M. A. (2019). Entrepreneurial ecosystem narratives and the micro-foundations of regional entrepreneurship. *International Journal of Entrepreneurship and Innovation*, *20*(3), 194–208. https://doi.org/10.1177/1465750318808426

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A Cross-Discipline View Of Trust. *Academy of Management Review*, *23*(3), 393–404. https://doi.org/10.5465/AMR.1998.926617

RStudio. (2023). *RStudio: Integrated Development Environment for R*. https://posit.co/products/open-source/rstudio/ [Retrieved May 22, 2023]

Rudeloff, C., Bekmeier-Feuerhahn, S., Sikkenga, J., & Barth, A. (2022). Conditions of One-Way and Two-Way Approaches in Strategic Start-Up Communication: A Qualitative Comparative Analysis (QCA). *International Journal of Strategic Communication*, *16*(2), 157–181. https://doi.org/10.1080/1553118X.2021.1994408

Ruebottom, T. (2013). The microstructures of rhetorical strategy in social entrepreneurship: Building legitimacy through heroes and villains. *Journal of Business Venturing*, *28*(1), 98–116. https://doi.org/10.1016/j.jbusvent.2011.05.001

Runyan, R. C. (2006). Small Business in the Face of Crisis: Identifying Barriers to Recovery from a Natural Disaster1. *Journal of Contingencies and Crisis Management*, *14*(1), 12–26. https://doi.org/10.1111/j.1468-5973.2006.00477.x

Saharia, C., Chan, W., Saxena, S., Li, L., Whang, J., Denton, E., Ghasemipour, S. K. S., Ayan, B. K., Mahdavi, S. S., Lopes, R. G., Salimans, T., Ho, J., Fleet, D. J., & Norouzi, M. (2022, May 23). *Photorealistic Text-to-Image Diffusion Models with Deep Language Understanding*. http://arxiv.org/pdf/2205.11487v1

Saini, S., & Plowman, K. (2007). Effective communications in growing pre-ipo start-ups. *Journal of Promotion Management*, *13*(3-4), 203–232. https://doi.org/10.1080/10496490802308547

Sanchez-Burks, J., Lee, F., Choi, I., Nisbett, R., Zhao, S., & Koo, J. (2003). Conversing across cultures: East-West communication styles in work and nonwork contexts. *Journal of Personality and Social Psychology*, *85*(2), 363–372. https://doi.org/10.1037/0022-3514.85.2.363

Sapienza, H. J., & Korsgaard, M. A. (1996). Procedural Justice in Entrepreneur-Investor Relations. *Academy of Management Journal. Academy of Management*, *39*(3), 544–574. https://doi.org/10.2307/256655

Scherer, K. (2003). Vocal communication of emotion: A review of research paradigms. *Speech Communication*, *40*(1-2), 227–256. https://doi.org/10.1016/S0167-6393(02)00084-5

Scheu, M., & Kuckertz, A. (2023). Explorers of the twenty-first century? A systematic literature review of the scholarship on international entrepreneurs from developed economies. *International Entrepreneurship and Management Journal*, *19*(1), 177–235. https://doi.org/10.1007/s11365-022-00815-4

Schulte, R. (2012). Entrepreneurial marketing and capital acquisition. *International Journal of Entrepreneurship and Small Business*, *16*(4), Article 47613, 471. https://doi.org/10.1504/IJESB.2012.047613

Schwab, A., & Zhang, Z. (2019). A New Methodological Frontier in Entrepreneurship Research: Big Data Studies. *Entrepreneurship Theory and Practice*, *43*(5), 843–854. https://doi.org/10.1177/1042258718760841

Schwartz, H. A., Eichstaedt, J. C., Kern, M. L., Dziurzynski, L., Ramones, S. M., Agrawal, M., Shah, A., Kosinski, M., Stillwell, D., Seligman, M. E. P., & Ungar, L. H. (2013). Personality, gender, and age in the language of social media: The open-vocabulary approach. *PloS One*, *8*(9), e73791. https://doi.org/10.1371/journal.pone.0073791

Schwarzkopf, J., Lévesque, M., & Maxwell, A. (2010). How entrepreneurs-in-residence increase seed investment rates. *Venture Capital*, *12*(1), 65–81. https://doi.org/10.1080/13691060903435783

Scopus (2022). Scopus-fact-sheet-2022_WEB. https://www.elsevier.com/__data/assets/pdf_file/0017/114533/Scopus-fact-sheet-2022_WEB.pdf [Retrieved May 22, 2023]

Seo, M.-G., & Barrett, L. F. (2007). Being emotional during decision making--Good or bad? An empirical investigation. *Academy of Management Journal. Academy of Management*, *50*(4), 923–940. https://doi.org/10.5465/amj.2007.26279217

Shane, S., Drover, W., Clingingsmith, D., & Cerf, M. (2020). Founder passion, neural engagement and informal investor interest in startup pitches: An fMRI study. *Journal of Business Venturing*, *35*(4). https://doi.org/10.1016/j.jbusvent.2019.105949

Shannon, C. E. (1948). A Mathematical Theory of Communication. *Bell System Technical Journal*, *27*(3), 379–423. https://doi.org/10.1002/j.1538-7305.1948.tb01338.x

Shepherd, D. A., & Zacharakis, A. (2001). The venture capitalist-entrepreneur relationship: Control, trust and confidence in co-operative behaviour. *Venture Capital*, *3*(2), 129–149. https://doi.org/10.1080/13691060110042763

Sheppard, B. H., & Sherman, D. M. (1998). The Grammars of Trust: A Model and General Implications. *Academy of Management Review*, *23*(3), 422. https://doi.org/10.2307/259287

Shermin, V. (2017). Disrupting governance with blockchains and smart contracts. *Strategic Change*, *26*(5), 499–509. https://doi.org/10.1002/jsc.2150

Short, C. E., & Short, J. C. (2023). The artificially intelligent entrepreneur: ChatGPT, prompt engineering, and entrepreneurial rhetoric creation. *Journal of Business Venturing Insights*, *19*, e00388. https://doi.org/10.1016/j.jbvi.2023.e00388

Short, J. C., Broberg, J. C., Cogliser, C. C., & Brigham, K. H. (2010). Construct Validation Using Computer-Aided Text Analysis (CATA). *Organizational Research Methods*, *13*(2), 320–347. https://doi.org/10.1177/1094428109335949

Silva, J. (2004). Venture capitalists' decision-making in small equity markets: a case study using participant observation. *Venture Capital*, *6*(2-3), 125–145. https://doi.org/10.1080/13691060410001675974

Simon, J., & Ettl, K. (2019). Entrepreneurs' views on corporate social responsibility communication in SMEs-insights from Germany. *International Journal of Entrepreneurship and Innovation Management*, *23*(4), 425–445. https://doi.org/10.1504/IJEIM.2019.100796

Singh, J., & Aust, O. (2022). *Message Machine: How communications will make you an unstoppable founder*. Eo Ipso Communications GmbH.

Singh, S., & Walia, N. (2022). Momentum investing: a systematic literature review and bibliometric analysis. *Management Review Quarterly*, *72*(1), 87–113. https://doi.org/10.1007/s11301-020-00205-6

Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer Trust, Value, and Loyalty in Relational Exchanges. *Journal of Marketing*, *66*(1), 15–37. https://doi.org/10.1509/jmkg.66.1.15.18449

Smallbone, D., Deakins, D., Battisti, M., & Kitching, J. (2012). Small business responses to a major economic downturn: Empirical perspectives from New Zealand and the United Kingdom. *International Small Business Journal: Researching Entrepreneurship*, *30*(7), 754–777. https://doi.org/10.1177/0266242612448077

Smith, B. R., & Bergman, B. J. (2020). The other side of the coin: Investor identity and its role in resource provision. *Journal of Business Venturing Insights*, *14*, e00175. https://doi.org/10.1016/j.jbvi.2020.e00175

Sørheim, R. (2003). The pre-investment behaviour of business angels: a social capital approach. *Venture Capital*, *5*(4), 337–364. https://doi.org/10.1080/1369106032000152443

Spinuzzi, C., Nelson, S., Thomson, K. S., Lorenzini, F., French, R. A., Pogue, G., Burback, S. D., & Momberger, J. (2015). Remaking the Pitch: Reuse strategies in entrepreneurs' pitch decks. *IEEE Transactions on Professional Communication*, *58*(1), 45–68. https://doi.org/10.1109/TPC.2015.2415277

Statista. (2020). *Media usage during COVID-19 by country | Statista*. https://www.statista.com/statistics/1106498/home-media-consumption-coronavirus-worldwide-by-country/ [Retrieved April 21, 2021]

Stokes, D. (2000). Putting Entrepreneurship into Marketing: The Processes of Entrepreneurial Marketing. *Journal of Research in Marketing and Entrepreneurship*, *2*(1), 1–16. https://doi.org/10.1108/14715200080001536

Strätling, R., Wijbenga, F. H., & Dietz, G. (2012). The impact of contracts on trust in entrepreneur–venture capitalist relationships. *International Small Business Journal: Researching Entrepreneurship*, *30*(8), 811–831. https://doi.org/10.1177/0266242610388822

Strauß, N. (2018). The role of trust in investor relations: a conceptual framework. *Corporate Communications: An International Journal*, *23*(1), 2–16. https://doi.org/10.1108/CCIJ-04-2017-0026

Sudek, R. (2006). Angel investment criteria. *Journal of Small Business Strategy*, *17*(2), 89–104.

Swan, J. E., Trawick, I., & Silva, D. W. (1985). How industrial salespeople gain customer trust. *Industrial Marketing Management*, *14*(3), 203–211. https://doi.org/10.1016/0019-8501(85)90039-2

Tata, A., Martinez, D. L., Garcia, D., Oesch, A., & Brusoni, S. (2017). The psycholinguistics of entrepreneurship. *Journal of Business Venturing Insights*, *7*, 38–44. https://doi.org/10.1016/j.jbvi.2017.02.001

Tausczik, Y. R., & Pennebaker, J. W. (2010). The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods. *Journal of Language and Social Psychology*, *29*(1), 24–54. https://doi.org/10.1177/0261927X09351676

Tenca, F., Croce, A., & Ughetto, E. (2018). Business angel research in entrepreneurial finance: a literature review. *Journal of Economic Surveys,* 32(5), 1384–1413. https://doi.org/10.1111/joes.12224

ter Wal, A. L. J. , Alexy, O., Block, J., & Sandner, P. G. (2016). The Best of Both Worlds: The Benefits of Open-specialized and Closed-diverse Syndication Networks for New

Ventures' Success. *Administrative Science Quarterly*, *61*(3), 393–432. https://doi.org/10.1177/0001839216637849

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, *14*(3), 207–222. https://doi.org/10.1111/1467-8551.00375

Triberti, S., Chirico, A., La Rocca, G., & Riva, G. (2017). Developing Emotional Design: Emotions as Cognitive Processes and their Role in the Design of Interactive Technologies. *Frontiers in Psychology*, *8*, 1773. https://doi.org/10.3389/fpsyg.2017.01773

Tumasjan, A., Braun, R., & Stolz, B. (2021). Twitter sentiment as a weak signal in venture capital financing. *Journal of Business Venturing*, *36*(2), 106062. https://doi.org/10.1016/j.jbusvent.2020.106062

Tuominen, P. (1997). Investor relations: a Nordic School approach. *Corporate Communications: An International Journal*, *2*(1), 46–55. https://doi.org/10.1108/eb046534

Twitter. (2019). *TWITTER, INC._10K_2020*. https://s22.q4cdn.com/826641620/files/doc_financials/2019/FiscalYR2019_Twitter_Annual_-Report-(3).pdf [Retrieved April 28, 2021]

Tyebjee, T. T., & Bruno, A. V. (1984). A Model of Venture Capitalist Investment Activity. *Management Science*, *30*(9), 1051–1066. https://doi.org/10.1287/mnsc.30.9.1051

van Balen, T., Tarakci, M., & Sood, A. (2019). Do Disruptive Visions Pay Off? The Impact of Disruptive Entrepreneurial Visions on Venture Funding. *Journal of Management Studies*, *56*(2), 303–342. https://doi.org/10.1111/joms.12390

van Eck, N. J., & Waltman, L. (2014). CitNetExplorer: A new software tool for analyzing and visualizing citation networks. *Journal of Informetrics*, *8*(4), 802–823. https://doi.org/10.1016/j.joi.2014.07.006

van Osnabrugge, M. (2000). A comparison of business angel and venture capitalist investment procedures: An agency theory-based analysis. *Venture Capital*, *2*(2), 91–109. https://doi.org/10.1080/136910600295729

van Werven, R., Bouwmeester, O., & Cornelissen, J. P. (2019). Pitching a business idea to investors: How new venture founders use micro-level rhetoric to achieve narrative plausibility and resonance. *International Small Business Journal: Researching Entrepreneurship*, *37*(3), 193–214. https://doi.org/10.1177/0266242618818249

Vogel, B., Reichard, R. J., Batistič, S., & Černe, M. (2021). A bibliometric review of the leadership development field: How we got here, where we are, and where we are headed. *The Leadership Quarterly*, *32*(5), 101381. https://doi.org/10.1016/j.leaqua.2020.101381

Wallnöfer, M., & Hacklin, F. (2013). The business model in entrepreneurial marketing: A communication perspective on business angels' opportunity interpretation. *Industrial Marketing Management*, *42*(5), 755–764. https://doi.org/10.1016/j.indmarman.2013.05.012

Weibl, J., & Hess, T. (2019). Finding the Next Unicorn: When Big Data Meets Venture Capital. *Proceedings of the 52nd Hawaii International Conference on System Sciences*. https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/7b0841ce-60cd-4b3d-8518-98ad5f69952b/content

Welpe, I. M., Spörrle, M., Grichnik, D., Michl, T., & Audretsch, D. B. (2012). Emotions and Opportunities: The Interplay of Opportunity Evaluation, Fear, Joy, and Anger as Antecedent of Entrepreneurial Exploitation. *Entrepreneurship Theory and Practice*, *36*(1), 69–96. https://doi.org/10.1111/j.1540-6520.2011.00481.x

Welter, F. (2011). Contextualizing Entrepreneurship—Conceptual Challenges and Ways Forward. *Entrepreneurship Theory and Practice*, *35*(1), 165–184. https://doi.org/10.1111/j.1540-6520.2010.00427.x

Welter, F. (2012). All you need is trust? A critical review of the trust and entrepreneurship literature. *International Small Business Journal: Researching Entrepreneurship*, *30*(3), 193–212. https://doi.org/10.1177/0266242612439588

Welter, F., & Smallbone, D. (2006). Exploring the Role of Trust in Entrepreneurial Activity. *Entrepreneurship Theory and Practice*, *30*(4), 465–475. https://doi.org/10.1111/j.1540-6520.2006.00130.x

Whitener, E. M., Brodt, S. E., Korsgaard, M. A., & Werner, J. M. (1998). Managers as Initiators of Trust: An Exchange Relationship Framework for Understanding Managerial Trustworthy Behavior. *Academy of Management Review*, *23*(3), 513. https://doi.org/10.2307/259292

Wiesenberg, M., Godulla, A., Tengler, K., Noelle, I.-M., Kloss, J., Klein, N., & Eeckhout, D. (2020). Key challenges in strategic start-up communication: A systematic literature review and an explorative study. *Journal of Communication Management*, *24*(1), 49–64. https://doi.org/10.1108/JCOM-10-2019-0129

Wiklund, J., Nikolaev, B., Shir, N., Foo, M.-D., & Bradley, S. (2019). Entrepreneurship and well-being: Past, present, and future. *Journal of Business Venturing*, *34*(4), 579–588. https://doi.org/10.1016/j.jbusvent.2019.01.002

Williams, S. D., Ammetller, G., Rodriguez-Ardura, I., & Li, X. (2016). A Narrative Perspective on International Entrepreneurship: Comparing Stories From the United States, Spain, and China. *IEEE Transactions on Professional Communication*, *59*(4), 379–397. https://doi.org/10.1109/TPC.2016.2608179

Williams, T. A., & Shepherd, D. A. (2016). Building Resilience or Providing Sustenance: Different Paths of Emergent Ventures in the Aftermath of the Haiti Earthquake. *Academy of Management Journal. Academy of Management*, *59*(6), 2069–2102. https://doi.org/10.5465/amj.2015.0682

Williamson, A. J., Drencheva, A., & Wolfe, M. T. (2022a). When do negative emotions arise in entrepreneurship? A contextualized review of negative affective antecedents. *Journal of Small Business Management*, 1–45. https://doi.org/10.1080/00472778.2022.2026952

Williamson, A. J., Battisti, M., & Pollack, J. M. (2022b). Capturing passion expressed in text with artificial intelligence (AI): Affective passion waned, and identity centrality was sustained in social ventures. *Journal of Business Venturing Insights*, *17*, e00295. https://doi.org/10.1016/j.jbvi.2021.e00295

Williamson, A. J., Gish, J. J., & Stephan, U. (2021). Let’s Focus on Solutions to Entrepreneurial Ill-Being! Recovery Interventions to Enhance Entrepreneurial Well-Being. *Entrepreneurship Theory and Practice*, *45*(6), 1307–1338. https://doi.org/10.1177/10422587211006431

Winkler, H.-J., Rieger, V., & Engelen, A. (2020). Does the CMO’s personality matter for web traffic? Evidence from technology-based new ventures. *Journal of the Academy of Marketing Science*, *48*(2), 308–330. https://doi.org/10.1007/s11747-019-00671-9

Wohlgemuth, V., Berger, E. S., & Wenzel, M. (2016). More than just financial performance: Trusting investors in social trading. *Journal of Business Research*, *69*(11), 4970–4974. https://doi.org/10.1016/j.jbusres.2016.04.061

Wolf, C., Godulla, A., Beck, L., & Neubert, L. S. (2022). The Role of Internal Communication in Start-ups: State of Research and Practical Approaches. *International Journal of Strategic Communication*, *16*(2), 255–272. https://doi.org/10.1080/1553118X.2021.2023544

Wong, A., Bhatia, M., & Freeman, Z. (2009). Angel finance: the other venture capital. *Strategic Change*, *18*(7-8), 221–230. https://doi.org/10.1002/jsc.849

World Economic Forum. (2020). *How COVID-19 is boosting the stay-at-home economy*. https://www.weforum.org/agenda/2020/05/covid19-coronavirus-digital-economy-consumption-ecommerce-stay-at-home-online-education-streaming [Retrieved April 22, 2021]

World Health Organization. (2020a). *Timeline: WHO's COVID-19 response*. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline [Last access April 22, 2021]

World Health Organization (2020b). Novel Coronavirus (2019-nCoV): situation report, 1. https://apps.who.int/iris/bitstream/handle/10665/330760/nCoVsitrep21Jan2020-eng.pdf?sequence=3&isAllowed=y [Retrieved September 30, 2021]

World Health Organization. (2021). *Coronavirus disease (COVID-19)*. https://www.who.int/health-topics/coronavirus#tab=tab_1 [Retrieved October 2, 2021]

Xiao, L. (2019). How lead investors build trust in the specific context of a campaign. *International Journal of Entrepreneurial Behavior & Research*, *26*(2), 203–223. https://doi.org/10.1108/IJEBR-05-2019-0265

Yang, H., & Li, H. (2018). Trust Cognition of Entrepreneurs' Behavioral Consistency Modulates Investment Decisions of Venture Capitalists in Cooperation. *Entrepreneurship Research Journal*, *8*(3). https://doi.org/10.1515/erj-2017-0084

Yang, S., & Berger, R. (2017). Relation between start-ups' online social media presence and fundraising. *Journal of Science and Technology Policy Management*, *8*(2), 161–180. https://doi.org/10.1108/JSTPM-09-2016-0022

Zahra, S. A., Yavuz, R. I., & Ucbasaran, D. (2006). How Much do you Trust Me? The Dark Side of Relational Trust in New Business Creation in Established Companies. *Entrepreneurship Theory and Practice*, *30*(4), 541–559. https://doi.org/10.1111/j.1540-6520.2006.00134.x

Zellweger, T., & Kammerlander, N. (2015). Family, Wealth, and Governance: An Agency Account. *Entrepreneurship: Theory and Practice*, *39*(6), 1281–1303. https://doi.org/10.1111/etap.12182

Zerfass, A., Verčič, D., Nothhaft, H., & Werder, K. P. (2018). Strategic Communication: Defining the Field and its Contribution to Research and Practice. *International Journal of Strategic Communication*, *12*(4), 487–505. https://doi.org/10.1080/1553118X.2018.1493485

Zhao, Q., Chen, C.-D., Wang, J.-L., & Chen, P.-C. (2017). Determinants of backers' funding intention in crowdfunding: Social exchange theory and regulatory focus. *Telematics and Informatics*, *34*(1), 370–384. https://doi.org/10.1016/j.tele.2016.06.006

Zheng, H., Hung, J.-L., Qi, Z., & Xu, B. (2016). The role of trust management in reward-based crowdfunding. *Online Information Review*, *40*(1), 97–118. https://doi.org/10.1108/OIR-04-2015-0099

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, F., Ma, X., Wang, D., Xu, W., Wu, G., Gao, G. F., & Tan, W. (2020). A Novel Coronavirus from Patients with Pneumonia in China, 2019. *The New England Journal of Medicine*, *382*(8), 727–733. https://doi.org/10.1056/NEJMoa2001017

Zott, C., & Huy, Q. N. (2007). How Entrepreneurs Use Symbolic Management to Acquire Resources. *Administrative Science Quarterly*, *52*(1), 70–105. https://doi.org/10.2189/asqu.52.1.70

Zupic, I., & Čater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods*, *18*(3), 429–472. https://doi.org/10.1177/1094428114562629