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When entrepreneurship meets finance and accounting: (non-)financial information exchange between venture capital investors, business angels, incubators, accelerators, and start-ups

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Abstract: Building on qualitative data from 53 interviews with different types of investors and start-ups, we study the financial and non-financial information that different investor types demand to monitor their portfolio start-ups' performance during different lifecycle stages, as well as how entrepreneurs generate and furnish the required information. We specifically show in detail how investors, like venture capitalists, incubators, or business angels, mitigate agency conflicts through the exchange of specific financial and non-financial information, both formally and informally. By directly comparing both investor and investee cases, we provide insight into the monitoring methods common among different investor types and start-ups. While investors consider accounting to be an important part of the relationship, some entrepreneurs do not or set their priorities differently. Our study illustrates that accounting not only plays a crucial role in the management of established businesses, but is equally important in entrepreneurial investment settings, as is financial literacy.

Keywords: entrepreneurship; investor–start-up relationships; venture capital; incubators; accelerators; financial information; agency theory.

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1 Introduction

In recent decades, a number of investor types (e.g., venture capitalists, business angels, incubators, and accelerators) have emerged. Investors offer start-ups – defined as firms "that start from weak market and resource positions" (Katila et al., 2012) – financing and support in mostly volatile environments where investments' future payoff is highly uncertain (Guenther et al., 2015; Hopp and Lukas, 2014; Dunne et al., 2019; Riar et al., 2021b). In this context, agency conflicts emerge from information asymmetries between the investor – who is not actively involved in the start-up's operating activities – and the entrepreneur – who "creates value by carrying out new combinations causing discontinuity" (Bull and Willard, 1993) and who is typically better informed about developments in their start-up (Healey and Palepu, 2001; Mitchell et al., 1995; Sloan, 2001). Prior research suggests this agency conflict can be mitigated through contracting as well as formal and informal governance mechanisms, such as post-investment monitoring (Croce et al., 2020; Healey and Palepu, 2001; Kaplan and Stromberg, 2001;

Wilhelm et al., 2022). Such solutions are based on an efficient flow of information, both financial and non-financial, between the two parties (Armstrong et al., 2010; Kaplan and Stromberg, 2001; Mitchell et al., 1995; Sloan, 2001). Thus, the availability and exchange of information is an integral part of this information flow and a prerequisite for successful cooperation between investors and start-ups. The literature affirms the importance of financial literacy and information in the investor–start-up relationship (Riar et al., 2017; Riepe et al., 2020). Scholars have analysed start-ups' management information systems and demonstrated how information is used within start-ups for internal decision-making (Davila et al., 2015; Haase and Eberl, 2019; Mengel and Wouters, 2015) and the crafting of financial value propositions (Kirchberger et al., 2020; Wouters et al., 2018).

General management research highlights the importance of valid evaluation outcomes for resource allocation decisions and the role of information in evaluation processes (Cordes et al., 2021; Hienerth and Riar, 2015). A range of studies has analysed the criteria that investors, especially venture capitalists, apply to evaluate potential portfolio start-ups (Guenther et al., 2015; Lumpkin and Ireland, 1988; Merrifield, 1987; Riar et al., 2021b; Tyebjee and Bruno, 1984) – that is, what information investors require from start-ups pre-investment. Several studies have also investigated the importance of information in investors' post-investment processes, mainly focusing on financial information (Mitchell et al., 1995, 1997). However, a number of important research gaps remain: insights on the types of non-financial information required by investors, the types of financial information requested by different types of investors (other than venture capital investors), what type of information is generated in start-ups, and how the types of information vary across stages of start-ups' life cycles, with "each life-cycle stage consist[ing] of a unique configuration of variables related to organisation context and structure" (Hanks et al., 1994).

To address these gaps in research, we analyse the interaction between investors and start-ups with regard to information by addressing the following research question: How do investors and start-ups exchange what type of information to mitigate the agency-conflict post-investment? In an effort to examine this research question, we analyse the kinds of information that different investor types demand to monitor their portfolio start-ups' performance and at what frequency, as well as how start-ups generate and provide the required information. We also consider differences in information exchange among investor types throughout the stages of the start-up life cycle. In our examination, we use an inductive, qualitative research method based on 53 interviews with investors and start-ups, finding that the vast majority of investors and start-ups exchange information and uncovering details on the manner and frequency of information exchange, the type of demanded information, and start-ups' internal performance measurement.

With this study on characteristics of information exchange between investors and start-ups, we contribute to the agency theory framework (Arthurs and Busenitz, 2003; Jensen and Meckling, 1976; Sloan, 2001), opening an avenue for future research exploring other accounting relationships in which an agency conflict might emerge and in which information might mitigate this conflict, such as the relationship between private corporations and external capital providers. In particular, we contribute to the literature on information exchange the following three 'whats' (Cordes et al., 2021; Mitchell et al., 1995, 1997; Riar et al., 2021b; Sweeting, 1991; Wouters and Pelz, 2018):

1 What do investors want (investors' information requirements)

2 What information do start-ups generate (type, role)

3 What way do start-ups exchange (i.e., formal and informal) with investors (information exchange between investors and start-ups).

Thereby, we explore the type of information demanded by investors during the investment period in different development stages of the start-ups, in contrast to prior research's predominant focus on pre-investment activities (Hall and Hofer, 1993; Kirsch et al., 2009). Our analysis is not limited to venture capitalists and incubators alone, yet extends to other for-profit investors as well (Mitchell et al., 1995, 1997). Further, we provide initial insights into the relationship between informal and formal methods of information exchange. To study information exchange jointly, our study is one of the first to directly compare both investor and investee cases regarding the requirements and delivery of information. With this research, we follow calls for more interdisciplinary analyses and contribute to the scarce knowledge at the intersection of entrepreneurship and accounting (e.g., Davila et al., 2009; Matthews et al., 2018; Welter, 2011).

This study is also relevant for professionals, as it provides an overview of common accounting methods among different investor types and start-ups. Entrepreneurs can derive useful insights on how to adequately design their own exchange systems, and investors can use insights from our study to revise and adapt their information requirements and monitoring activities. In this way, these findings can serve as a basis for practitioners to exchange business insights and know-how in order to improve the performance of new ventures, even after failure (Cordes et al., 2021; Riar et al., 2021a). As this paper highlights investors' and start-ups' opinions and perspectives on information exchange, it might encourage start-ups to understand investors' information needs and, eventually, increase their likelihood of obtaining funding. Additionally, the paper makes transparent the reasons behind the limited availability of information for investors, opening the path to an improved understanding of the other party's requirements; this could enhance the flow of information between investors and start-ups, leading to increased collaboration efficiency.

2 Theoretical framework

2.1 Agency conflict in investor-entrepreneur relationships

Research on agency theory defines the agency relationship as 'a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent' (Jensen and Meckling, 1976, p.5). According to agency theory, both parties are assumed to be rational, profit-maximising, and self-interested, as well as to have incongruent goals (Arthurs and Busenitz, 2003; Jensen and Meckling, 1976; Sloan, 2001). In the relationship between these parties, the problem of asymmetric information exists, which might lead to adverse selection ex ante and to a moral hazard ex post (Eisenhardt, 1989a). Agency conflict has been analysed in various contexts: for example, within family firms (Li et al., 2020; Riar and Kellermanns, 2021).

In the context of entrepreneurship, an agency conflict emerges between an entrepreneur ('agent') with the need for financial or non-financial support and an investor

('principal') who provides the funds for the start-up (Mitchell et al., 1995; Bellavitis et al., 2019). The agency problem in this setting results from an information asymmetry between the entrepreneur, who has more and better information about the start-up, and the investor, who acquired shares through an investment and delegates decision-making but is not actively involved in the business (Healey and Palepu, 2001; Sloan, 2001). Information asymmetries are particularly evident in entrepreneurship because much of the knowledge related to the start-up is intangible and context-specific; outsiders have limited sources of information besides the entrepreneurs (Cassar, 2009; Wouters and Pelz, 2018).

Before an investment, this information asymmetry leads to a situation of adverse selection, as the investor and the entrepreneur may assign different probabilities and hence have different assumptions about the start-up's likelihood of default. After an investor makes an investment in a start-up, a moral hazard occurs: Entrepreneurs may engage in opportunistic behaviour that manifests as a lack of effort (e.g., a suboptimal allocation of capital) or the consumption of 'perks' (e.g., a direct transfer of wealth from the investor to the entrepreneur) (Arthurs and Busenitz, 2003; van Osnabrugge, 2000).

Prior literature has reflected on several ways to mitigate the agency conflict between investors and entrepreneurs. First, the investor can design the investment contract in such a way that it provides moral incentives for the entrepreneur, and second, investors can rely on monitoring activities post-investment (Healey and Palepu, 2001; Kaplan and Stromberg, 2001; Wouters and Pelz, 2018). Mitigating the agency conflict depends on suitable information flows between the investor ('principal') and the start-up ('agent'), and information is an integral part of this (Healey and Palepu, 2001; Kaplan and Stromberg, 2001; Armstrong et al., 2010; Mitchell et al., 1995; Sloan, 2001).

2.2 Information requirements by investors

Practices to obtain information. Prior research has confirmed the importance of information for investors, suggesting that the availability and supply of such information is often a pre-investment requirement (Hellmann and Puri, 2002; Guenther et al., 2015; Mitchell et al., 1995, 1997; Riar et al., 2021b), and that the quality of information also positively influences the volume and efficiency of the capital provided (Biddle and Hilary, 2006). Investors apply different practices to ensure a reasonable flow of information after an investment has been made. Some investors require direct access to their portfolio start-ups' information systems, while others vet their clients' information systems at the beginning of the investment period. When there are deficiencies, investors demand changes to the systems as an investment condition. These often involve formal or informal information exchange practices at the portfolio start-ups (Mitchell et al., 1995; Sweeting, 1991; Wouters and Pelz, 2018). Formal performance meetings are complemented by occasional informal telephone calls and visits on-site to exchange information (Sweeting, 1991), and high uncertainty and agency risk are tackled with increased informal face-to-face interactions (e.g., Sapienza et al., 1996).

Types of information demanded. Most investors require financial statements, preferably the profit and loss statement, the balance sheet, and most importantly, the cash flow statement (Mitchell et al., 1995). The actual financials are reviewed in light of forecasts or budget planning (Davila and Wouters, 2005; Frezatti et al., 2011). Investors also require additional narratives: qualitative explanations of financials and off-balance sheet

items in various forms, directly or indirectly reflecting investors' specific needs (Mitchell et al., 1995). The importance of financial and non-financial information for investors varies by the type and maturity of start-ups (Hand, 2005; Manigart et al., 2000; Sapienza et al., 1996). For example, Sapienza et al. (1996) show that venture capitalists in Europe place greater emphasis on financial information than venture capitalists in the United States do. Hand (2005) provides evidence that financial and non-financial information are substitutes, not complements, and suggests that non-financial information is initially used by venture capitalists, while financial information becomes relevant when start-ups mature, as the financial data becomes increasingly reliable.

Information system requirements. The literature also provides insight into investors' requirements for their portfolio start-ups' information systems. Bassen and Gröne (2003) suggest that venture capitalists primarily expect start-ups to apply basic accounting mechanisms, with the preparation of a basic cash flow statement, a capital investment calculation, profit-and-loss statements, and a profit contribution calculation all considered important (Davila et al., 2015). Most investors do not require complex information systems, such as a balanced scorecard or a key performance indicator (KPI) system, and the use of non-financial performance measures – such as customer or process KPIs – are ranked behind traditional financial statements in importance (Bassen and Gröne, 2003).

2.3 The generation of information in start-ups

Performance metrics. According to Nietzer (2003), entrepreneurs in early-stage start-ups focus on developing and improving a product or service, defining their position in the market, and preparing for market entry. This stage is shaped by investments and cash outflows to build up initial resources and competencies. A start-up's performance in this stage can be tracked using relevant non-financial performance indicators, such as the number of potential customers and sales calls or the product development milestones reached. In later-stage start-ups, entrepreneurs engage in optimisation activities and try to maximise the revenue and profit potential. With this focus on financial performance, the non-financial performance indicators are complemented by financial measures that track the start-up's profitability. Practitioners have developed a range of analytical frameworks that make specific suggestions on adequate metrics or metric frameworks for start-ups (e.g., Croll and Yoskovitz, 2013). The lean analytics approach is one of the most popular analytical frameworks that integrates relevant performance metrics for start-ups into various stages of the life cycle. According to Croll and Yoskovitz (2013), entrepreneurs should choose 'one metric that matters' – that is, one that adequately reflects the main target of the start-up's current business operations. That metric, which changes over time as the target of a growing start-up develops, allows entrepreneurs to focus their activities on the most important areas in the start-up's respective development stage. As the start-up grows, more than one metric is typically relevant. Hence, Croll and Yoskovitz (2013) recommend setting up a hierarchy of metrics, aligning strategy and implementation with a consistent set of goals.

Information in start-ups. Accounting reports should contain a combination of financial and non-financial information and inform the reader about the start-up's historic and planned performance (Schenk, 2003; Wittenberg, 2006). As financial information has limited explanatory power for most start-ups, non-financial information provides additional insights into the start-up's operations (Wittenberg, 2006). Further, the

combination of financial and strategic information allows the capital providers to identify causes and relationships between business activities and financial results (Schenk, 2003). As – usually limited – information about the start-up's historical performance becomes available, forward-looking statements become relevant for external stakeholders' evaluation (Wittenberg, 2006). Start-ups ideally supply financial performance information on a regular (e.g., monthly) basis, and those reports may contain a traditional profit and loss statement, a balance sheet, and information on the start-up's cash flow and liquidity (Wittenberg, 2006; Schenk, 2003). Further, a comparison of current budget figures should be included to allow for comparison – and hence, evaluation – of the reported financials (Schenk, 2003).

3 Methodology

To understand what information investors require and how portfolio start-ups generate that information, this study employed an exploratory, qualitative approach with a multiple case study research design. Knowledge in this academic field is fragmented. A qualitative method enables answering the question of how something is done (Brinkmann, 2013; Pratt, 2009) and recognises the diversity of the organisations interviewed (Flick, 2009), which is relevant for this study because monitoring and information systems' designs vary by context (Bassen and Gröne, 2003). Our one-on-one semi-structured interview approach allowed us to generate a holistic understanding on the complex relationships between investors and start-ups (Rose et al., 2014); especially which systems are used, but also how they are applied and perceived by the individual users.

3.1 Empirical setting and case selection

We conducted 53 interviews with investors and their portfolio start-ups in total.[1] Only profit-oriented private investors were included in the study, as they were expected to require information to mitigate the agency conflict with their portfolio start-ups. Further, the study was limited to investors and start-ups in Germany to ensure a similar cultural and legal background among all participating organisations. No selection criteria regarding the size or age of the participating companies were applied, as those characteristics were used to classify the interviewed institutions.

We determined the companies and interview partners using a two-step process. First, we identified potential investors through extensive manual research and recruited interview partners from the investors chosen through cold calls, followed by email reminders. In total, we contacted 119 investors and 28 agreed to participate, resulting in a response rate of 24%. Second, we identified possible interview partners in the start-up field through the previously interviewed investors. We asked the investors to make contact with portfolio start-ups available for an interview. Through that contact and an investigation of publicly available information, the start-ups could be assigned to one of the three life cycle stages (pre-seed, seed, and growth). Ten of the investors interviewed contacted their portfolio companies, with all 21 start-ups contacted agreeing to participate. Four additional start-ups participated through personal contact with one of the authors.

3.2 Data collection and case study description

Tables 1 and 2 present the distribution of the investors interviewed and start-ups across stages of the life cycle. At least three investors from each investor type were interviewed, with no less than 16 views on the accounting practices in each of the three life cycle stages (see Table 1). The start-ups interviewed were mainly distributed across four investor types: incubators, accelerators, venture capitalists, and company builders (see Table 2). Only two of the start-ups interviewed were supported by the investor type 'cooperation' and none was classified as being supported by a business angel. Nearly half of the start-ups interviewed were in the growth stage, with four in the pre-seed phase.

Table 1 Actual distribution of investors interviewed across investor types and start-ups' life cycle stages (own illustration)

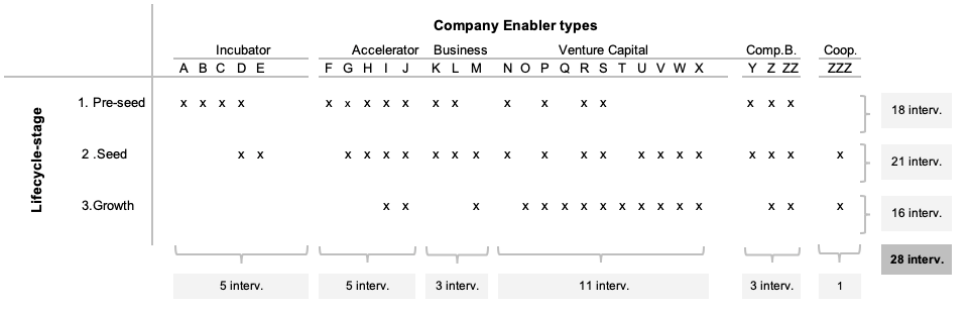
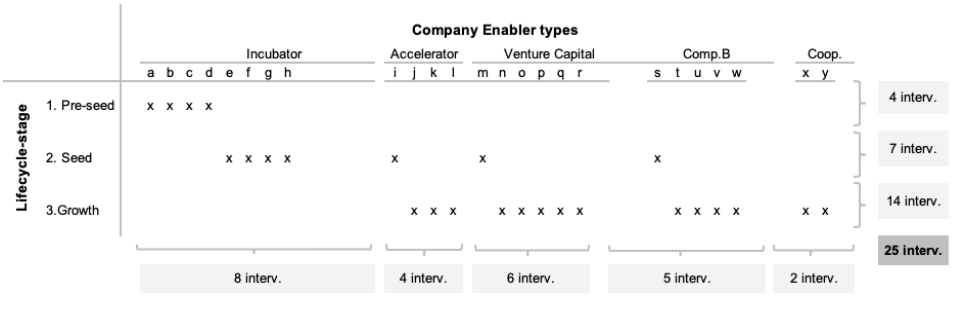


Table 2 Actual distribution of start-ups interviewed across investor types and start-ups' life cycle stages (own illustration)



The data was collected from mid-November 2014 to mid-January 2015. Most interviews were conducted via telephone (41 interviews) or Skype (nine interviews), while one interview was conducted in person and three in written form. All interviews (minus the written interviews) lasted between 8 and 51 minutes, with an average time of 29 minutes; all but one were audio-recorded. All but one of the interviews (English) were conducted in German. Among investors, the interview partners were mainly portfolio managers (42%) or founders of the organisation (15%). For more details on the investors, see Table 3. Among start-ups, they were mainly founders (72%). Before each interview, the interviewer reviewed company information from public sources, such as company websites and press releases, to familiarise themselves with the company characteristics before data collection.

Table 3 Demographic characteristics of company enablers (own illustration)

		Age	Size I - No. of employees	Size II – Cumulated No.of startups	Corporate vs. Non-Corporate
A	**Incubator**	0	2	18	No
B	**Incubator**	1	2	8	No
C	**Incubator**	2	-	24	Yes
D	**Incubator**	1	5	46	Yes
E	**Incubator**	1	6	26	Yes
F	**Accelerator**	1	2	8	No
G	**Accelerator**	0	7	2	Yes
H	**Accelerator**	2	-	15	Yes
I	**Accelerator**	0	7	6	Yes
J	**Accelerator**	2	-	25	No
K	**Business Angel**	4	1	6	-
L	**Business Angel**	14	1	-	-
M	**Business Angel**	12	1	10	-
N	**Venture Capital**	1	8	4	No
O	**Venture Capital**	10	7	21	No
P	**Venture Capital**	1	3	9	No
Q	**Venture Capital**	5	31	151	Yes
R	**Venture Capital**	7	-	29	No
S	**Venture Capital**	1	6	38	No
T	**Venture Capital**	18	27	88	No
U	**Venture Capital**	2	9	3	Yes
V	**Venture Capital**	3	-	25	Yes
W	**Venture Capital**	4	-	22	Yes
X	**Venture Capital**	7	4	13	Yes
Y	**Company builder**	4	25	15	No
Z	**Company builder**	3	35	30	No
ZZ	**Company builder**	3	9	8	No
ZZZ	**Cooperation**	1	8	3	Yes

Two sets of interview guidelines, one for the interviews with investors and one for the interviews with start-ups, guided the semi-structured interviews. Setup based on the reviewed literature, the interview guidelines were pretested with other academic experts,

as well as with an investor and a start-up, and revised accordingly. Both sets of guidelines had a first part assessing (for investors) basic demographic information and the design of the investors' programs and (for start-ups) characteristics and their respective life cycle stage, as well as a second part on (for investors) the information flow to the investor and (for start-ups) the generation of information within the start-up and flow of information to external parties. Both sets of interview guidelines included several open-ended questions that were initially asked to elicit long narrative answers from the interviewees. Interviewers posed specific follow-up questions in the guidelines if all topics of interest were not covered. Questions focused on facts rather than on topics that relied on the interviewees' interpretations (Eisenhardt, 1989b).

Following a clear data-reduction process, the recorded interviews were transcribed and summarised. After a first within-case analysis via a thorough reading of the transcribed interviews (Eisenhardt, 1989b), we derived thematic clusters from the reviewed literature and complemented them with topics that emerged from the within-case analysis. After cluster development, we arranged the data for each case according to those topics. Then, we conducted a thorough cross-case analysis twice to compare the data from cases within each cluster in order to address and validate all information provided relative to the research objective (Eisenhardt, 1989b).

4 Findings

Our interviews mainly revealed findings in the following three thematic clusters, as presented below:

1 investors' information requirements

2 start-ups' information generation and transfer

3 differences across investor types and life cycle stages.

4.1 Investors' information requirements[2]

Most investors who participated in the study (96%) require certain information from their portfolio start-ups, with one exception: One interviewed investor (classified as 'cooperation') said no information is required, as the relationship with the start-up is comparable to a 'buyer-seller' relationship. In general, the data suggests that no common rule has yet emerged regarding the optimal information needed. The importance, format, and type of required information vary across investors, and even within a single investor portfolio. However, trends did surface on the channels used and the type of information required by investors.

The majority of investors receive information through formal and informal channels (57%), although the relative importance of each information source varies. Investors informally receive information through personal meetings with entrepreneurs. For example, especially at incubators, the investor typically works in the same office building as their portfolio start-ups, and thus, gathers information on new developments during spontaneous meetings or joint workshops. Other types of investors provide the start-ups with non-financial support on a project-by-project basis and witness the start-up's

situation firsthand. Hence, the number of informal contacts determines the degree of informally (mostly verbally) supplied information.

About one-third (32%) of the investors interact with the start-up founders on a daily basis, suggesting they receive a substantial amount of informal information over the investment period. The remaining investors rely to a more limited degree on informal information or adapt the intensity of informal contact to the start-up's requirements. For example, approximately 40% of the interviewees specifically stated that informal information exchange is important at the beginning of the relationship, as both parties must get to know each other.

Many of the investors require a formal report (79%), with 50% requiring monthly written updates and 14% requiring these updates weekly. The 21% who demand no report either rely on intensive informal information exchange with the entrepreneurs or have direct, real-time access to the start-up's information, making formal information delivery redundant. In most cases, investors requiring written information keep the reporting format short and simple, averaging three to four pages.

In addition, most of the investors in our sample (68%) require regular formal meetings with the entrepreneurs, which are often considered follow-ups to discuss the information provided in the written reports. However, the number of formal meetings tends to be less than or similar to the number of written reports. In total, 57% of the investors have formal meetings at least monthly; 43% have either quarterly or no meetings. Venture capitalists in particular require verbal presentations during quarterly board meetings. Overall, the data indicates that the intensity of formal information exchange is usually determined at the beginning of the investment period.

With regards to the type of information required, certain investors have limited standardised information requirements and minimal information needs, which are generally adapted to each individual start-up. This often leads to variance in the information supplied within the investor's portfolio companies. While the majority of investors (64%) require a combination of information types (quantitative and qualitative), the percentage of investors demanding only quantitative information (21%) is higher than the group demanding only qualitative information (11%). The required quantitative information includes a set of KPIs – 89% rely on KPIs to measure the performance of tenant start-ups – and an outline of basic financial statements.

The set of required KPIs consists of the start-up's five to ten most important performance indicators reflecting financial and non-financial performance. The required financial KPIs are largely standardised and refer, for example, to the gross yield and rate of cash consumption (i.e., 'burn rate'). The required non-financial KPIs reflect the business' value drivers and differ for each start-up. The basic financial statements are required by approximately one-third of the investors. Some investors also require the start-up's cash flow statement or an outline of the liquidity plan (25%) or a detailed overview of the profit and loss statement (21%).

The quantitative information provided is often complemented by qualitative, non-financial information. This might be a qualitative explanation of financial and non-financial performance that is delivered either in writing or orally during follow-up meetings. The qualitative information supplied might also include an overview of recent developments not yet reflected in the KPIs that have led – or will lead – to revenue. Also, an overview is often provided of the start-up's most pressing business concerns or the entrepreneur's main areas for improvement. Further, 43% of the investors track the

achievement of qualitative milestones, and 18% consider the business plan to be an important tool to evaluate start-ups' performance.

4.2 Start-ups' information generation and transfer[3]

Although 96% of start-ups measure their performance, the amount of time invested in generating and analysing financial and non-financial data ranges from 2 h to one day per week. Among start-ups, 20% use qualitative milestones to evaluate their development. In particular, qualitative information is used among pre-seed start-ups that monitor their product or service development.

The quantitative accounting performance indicators used reflect the start-up's financial and non-financial performance. While more than three-quarters of start-ups (76%) use a combination of both types of quantitative performance indicators, non-financial indicators are more popular than financial indicators, with an application rate of 96%. The start-up's financial performance is analysed based on a range of financial KPIs. The burn rate, which measures how fast a company consumes shareholder capital, is the most popular financial performance indicator, with 32% of the interviewed start-ups analysing their burn rate on a regular basis, that is specifically applied in the early stages.

Additionally, 'top-line' KPIs on the start-up's revenue and gross revenue are also applied. Financial KPIs are assessed based on a simple cash flow or liquidity calculation, the top line of a profit and loss statement. Start-ups' non-financial performance is analysed through non-financial KPIs, which primarily track the efficiency of start-ups' marketing activities and the behaviour of potential customers; 68% of the start-ups measure non-financial performance with quantitative measures relating to their marketing activities or consumer behaviour. In later stages, a range of additional non-financial KPIs is developed alongside the business process, with these KPIs tracking the start-up's performance in each step of the value chain. The types of non-financial KPIs measured vary across start-ups. Our data suggests that start-ups generally track their non-financial KPIs daily, while the financials are reviewed monthly.

The entrepreneurs interviewed generally use simple tools to generate and analyse their performance data. Of the start-ups, 36% derive the data for their non-financial performance analysis from their website's back end and online marketing analysis tools, such as Facebook Audience Insights or Google Analytics. In terms of financial performance data, 48% of start-ups use simple bookkeeping and tax tools to generate this data. Most of the start-ups (84%) analyse their financial and non-financial data using simple Excel spreadsheets, and only 16% have implemented more complex systems, such as a business intelligence tool, enterprise resource planning system, or data warehouse. Some entrepreneurs (8%) also use project management tools to track the achievement of milestones.

Many of the start-ups (76%) provide at least some information to their investors. Further, the data from the entrepreneur interviews confirms investors' statements on the type and channel of information exchanged. A first analysis of the data from the interviews with the start-ups confirmed that there is a focus on the exchange of quantitative (72%) rather than qualitative (60%) information and that formal channels are used to a greater degree (64%) than informal channels (32%) to exchange information. A more detailed analysis would not have been expedient, as this part of the interview only served to confirm investors' statements and a direct comparison of statements would not be possible due to the open, inductive character of the interviews.

The interviews with the start-ups provide insights into the information supply for start-ups supported by multiple investors. Of the start-ups, 28% said they supply the same amount and type of information to all investors, either regular written reports or formal board meetings. The entrepreneurs further explained that one lead investor often determines the design, amount, and type of information that the start-up must supply, and the other investors (mostly with a smaller investment in the start-up) assimilate to those requirements. After a new investment round, the start-up adapts the information supply to reflect the additional requirements of new investors and the start-up's respective life cycle stage. However, 8% of the entrepreneurs report to all investors.

4.3 Differences across investor types and life cycle stages

We have grouped our findings along six investor types and three life cycle stages, with the findings demonstrating in-group similarities and suggesting that a certain investor type or life cycle stage influences accounting practices. The channel, frequency, and type of information exchanged differ across investor types: Incubators rely heavily on daily informally supplied information, with the small physical distance between the incubator and the start-ups allowing for intensive personal contact. All incubators have a high and steady informal exchange of information. Additional formal delivery of information is of minor importance, and the data shows a rather basic qualitative information demand, partly supplemented by non-financial KPIs. All incubators require qualitative information. Three out of five require further quantitative information that mainly refers to non-financial KPIs. If financial information is not readily available through the start-ups, 80% of incubators in our sample require no financial information.

Start-ups supported by incubators measure their own performance less than start-ups supported by other investor types do. Among incubator start-ups, 88% track their performance with a combination of qualitative and quantitative indicators – with a focus on quantitative, non-financial measures – and 50% track qualitative milestones. Of the incubators interviewed, 88% track their performance based on quantitative, non-financial indicators. This implies that all incubator start-ups measuring their performance rely on those indicators. Corporate investors appear to not require information from incubator start-ups, with information exchange depending on joint project development; that is, the development of the start-up itself is of minor interest. We observed no differences in accounting practices among this type of investor's start-ups.

The accounting practices of accelerators, business angels, venture capitalists, and company builders – and of their respective start-ups – appear to be rather similar. They favour regular, formal information exchange, with 91% of these investors requiring formal written performance updates (often – 73% – complemented by formal, oral follow-up meetings); 64% require such updates monthly. Accelerators, business angels, and venture capitalists occasionally receive additional information through informal channels if they have more intensive contact with the entrepreneurs: for example, during a new round of financing or if strategic support is required. By contrast, company builders rely on additional informal meetings; similar to incubators, they share office space with the start-ups, allowing for frequent informal information exchange. Accelerators, business angels, venture capitalists, and company builders require more extensive information, both qualitative and quantitative (with a focus on the latter) compared to incubators. Of the investors in those four investor types, 73% require qualitative information and 100% require quantitative information. Non-financial KPIs

are popular among these investor types (96%). Additionally, 95% require financial updates from the start-ups, and approximately one-third demand an outline of the financial statements (31% require a management analysis, 36% a profit and loss statement, and 32% a cash flow statement). Business angels particularly mentioned the importance of cash flow and liquidity calculations (at 67%). All start-ups supported by an investor (except start-ups in incubator programs) track their performance, employing a broader combination of qualitative and quantitative measures. These start-ups especially measure quantitative, non-financial KPIs, and the vast majority also track their financial performance.

Furthermore, incubators, company builders, accelerators, and business angels appear to largely model their information requirements on their start-ups' reporting ability. For example, none of the incubators has fixed requirements, and one of the three business angels said they jointly determine the information's content and layout with the start-up. Venture capitalists, by contrast, more frequently have specific guidelines (at 82%), especially in terms of financial information.

Our data indicates that pre-seed start-ups and their investors differ in their accounting practices from other stages. Investors focus on an informal information demand, require no formal written reports, and have limited formal meetings with the entrepreneurs. All interviewed investors who support start-ups only in the pre-seed stage receive information through informal channels; 50% of those require formal, verbal meetings, and none requires any written report. All of those investors who support start-ups in multiple life cycle stages said their informal contact with entrepreneurs is more intense during critical phases, which are generally more frequent at the beginning of a start-up's life cycle. Additionally, they mainly require the measurement of project milestones. In half of the cases, milestone measurement is complemented by non-financial KPIs, and investors do not demand any financial information. All investors focusing on pre-seed start-ups require milestones. Start-ups in the pre-seed phase track their own performance less than start-ups in later phases do. Of the start-ups interviewed in the pre-seed stage, 75% measure their performance; 100% of the remaining start-ups track their development. Those that track their performance do so through a combination of qualitative measures and quantitative performance indicators, with 50% applying milestones and 75% measuring their financial performance based on the burn rate and other qualitative, non-financial KPI measures.

The channel and frequency of the information exchanged do not vary considerably across the remaining two life cycle stages (seed and growth), although the type of information generated and exchanged is adapted. The investors who described differences in their information requirements across life cycle stages only mentioned differences in the content, not the information channel. Additionally, the grouping of investor cases according to the start-up life cycle stage shows that differences exist among these groups, although we identified no significant trend regarding changes in the importance of certain channels over the life cycle.

Predominantly, information exchange through both formal and informal channels is regularly used in these two stages, and the frequency of information exchange decreases as the start-up matures. As to information required and generated, investors often demand that non-financial KPIs and the first financial KPIs after business launch be measured in the seed stage, sometimes supported by financial statements. Of the investors interviewed

who support start-ups from the seed phase on, 85–90% require KPIs, and between 88% and 100% of those require financial information. Non-financial KPIs are of major importance in the beginning (the seed stage), and serve as a proxy for the start-up's future revenue. With the increasing availability of financial data over time, the scope of financial reporting and measured financial KPIs increases in parallel. The type and number of KPIs are adapted every three to four months on average based on the start-up's life cycle stage and its individual situation. The application of information tools, such as a business intelligence system, increases as well. Table 4 presents a summary of the KPIs suggested by our interviewees.

Table 4 Key performance indicators suggested by company enablers (own illustration)

	Type	Lifecycle stage focus			Type	Description
U	Venture Capital		Seed	Growth	Financial	- Liquidity
U	Venture Capital		Seed	Growth	Financial	- Cash flow
U	Venture Capital		Seed	Growth	Financial	- Revenues
U	Venture Capital		Seed	Growth	Operative	- Number of units sold
U	Venture Capital		Seed	Growth	Operative	- Price of product/service
W	Venture Capital			Growth	Operative	- Traffic
W	Venture Capital			Growth	Financial	- Revenues
W	Venture Capital			Growth	Financial	- Costs
W	Venture Capital			Growth	Financial	- EBITDA
W	Venture Capital			Growth	Operative	- Number of registrations/customers
W	Venture Capital			Growth	Operative	- Number of registrations
W	Venture Capital			Growth	Operative	- Number of walk-ins, number of check-ins (online shop)
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Costs for traffic generation
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Costs per acquisition of registered user
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Costs until acquisition of first customer
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Amount of orders
Y	Company builder	Pre-seed	Seed	Growth	Operative	- New vs. recurrent customers
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Customer acquisition cost
Y	Company builder	Pre-seed	Seed	Growth	Operative	- Customer Lifetime Value
Y	Company builder	Pre-seed	Seed	Growth	Financial	- Costs per unit
Y	Company builder	Pre-seed	Seed	Growth	Financial	- Cost blocks
Z	Company builder	Pre-seed	Seed	Growth	Operative	- Conversion rate (e.g. ads/paid activities)
Z	Company builder	Pre-seed	Seed	Growth	Financial	- Burn rate
Z	Company builder	Pre-seed	Seed	Growth	Financial	- Revenues
Z	Company builder	Pre-seed	Seed	Growth	Financial	- Margin
Z	Company builder	Pre-seed	Seed	Growth	Financial	- EBIT
ZZ	Company builder	Pre-seed	Seed	Growth	Operative	- Number of acquired customers
ZZ	Company builder	Pre-seed	Seed	Growth	Operative	- Importance of marketing channels
ZZ	Company builder	Pre-seed	Seed	Growth	Operative	- Number of customer on webpage/ day
ZZ	Company builder	Pre-seed	Seed	Growth	Operative	- Number of buyers/ day
ZZ	Company builder	Pre-seed	Seed	Growth	Financial	- Revenues and approximation of profit

5 Discussion

With this study on characteristics of information exchange between investors and start-ups, we contribute to the agency theory framework, opening an avenue for future research exploring other accounting relationships in which an agency conflict might emerge and in which information might mitigate this conflict, such as the relationship between private corporations and external capital providers. Our findings demonstrate our contribution to the literature on information exchange within the following three 'whats' (Cordes et al., 2021; Mitchell et al., 1995, 1997; Riar et al., 2021b; Sweeting, 1991; Wouters and Pelz, 2018):

1 What do investors want (investors' information requirements post-investment)

2 What information do start-ups generate (type, role)

3 What way do start-ups exchange (i.e., formal and informal) with investors (information exchange between investors and start-ups).

Thereby, we contribute to theory by exploring the type of information that investors demand during the investment period, in contrast to prior research overwhelmingly focused on investors' activities prior to investment (Hall and Hofer, 1993; Kirsch et al., 2009). Following the suggestion of Davila et al. (2009), we provide initial insight into the relationship between informal and formal methods of information exchange. Moreover, extending prior research focused on venture capitalists (Mitchell et al., 1995, 1997) and incubators to other for-profit investors, like business angels or incubators, this research could be a starting point for analysing other investment practices. While prior literature has predominantly focused on start-ups' use of information for controlling purposes, this study is, to the best of our knowledge, unique in analysing start-ups' information generation and supply to external parties. We contribute a better understanding of the exchange of information between investors and start-ups, and we show that management accounting not only plays a crucial role in strategic management (Brouthers and Roozen, 1999), but also is important in entrepreneurial investment settings, as is financial literacy (Riepe et al., 2020). Unlike prior research, which has analysed start-ups' management accounting practices and investors' evaluation methods in isolation, this paper jointly analyses their interface. Through exploring this relationship within the agency theory framework, this study opens a potential avenue for research exploring the accounting relationship when agency conflicts might emerge and when information has the potential to mitigate this conflict. In doing so, we follow calls for more interdisciplinary analyses and contribute to the scarce knowledge at the intersection of entrepreneurship and accounting (e.g., Davila et al., 2009; Matthews et al., 2018; Welter, 2011).

Not restricted to theory alone, we contribute also to managerial practice by providing an overview of common accounting methods among investors and start-ups. This allows representatives from both types of organisations to compare their accounting practices with industry standards and adapt their methods if desired. In this way, these findings can serve as the basis for practitioners to exchange accounting know-how in order to improve accounting methods and, eventually, can lead to a common accounting framework. Additionally, this paper highlights investors' and start-ups' opinions and perspectives on information exchange. This could foster start-ups' understanding of investors' information needs and, hence, increase their likelihood of obtaining funding. It could also make transparent the reasons behind the limited availability of information for investors. An improved understanding of the other party's requirements could also enhance the flow of information between investors and start-ups, leading to increased collaboration efficiency.

5.1 Investors' information requirements

According to agency theory, investors demand information from start-ups to mitigate the agency conflict between the two parties (Jensen and Meckling, 1976). Indeed, our results show that investors demand information from their portfolio start-up firms. Only the investor type 'cooperation' indicated no need for information on start-ups' performance,

instead requiring information on the development of the joint project. This investor may require less information because of limited agency conflicts: The investor invests in a joint project instead of directly into the start-up, meaning the provision of resources and management are not separate but rather shared. Additionally, the amount of invested resources is lower than that of other investors, indicating a reduced risk exposure.

Our results also provide evidence that investors' information needs extend beyond traditional financial accounting requirements. Start-ups must provide more detailed information more regularly. Further, although the balance sheet is largely excluded from reporting requirements, start-ups provide the remaining financial statements in greater detail. The financial statements are also usually complemented by non-financial and financial KPIs, as well as qualitative information. It appears that investors foster an intense, up-to-date information flow for several reasons. As Investor 'L' states:

> "Honestly, two aspects are important. On the one hand, we want to know what is going on. […] But also, and this is even the more important reason, we want to hold up a mirror to the founders."

This suggests that investors demand frequent updates on start-ups' performance so they can react promptly, use their expertise or business contacts, and hence, avoid operational disasters or losses. Further, they aim to motivate the entrepreneurs to use information for controlling purposes. Additionally, according to Mitchell et al. (1995, p.194), the "greater intensity of scrutiny of investee performance […is] important in motivating the agent to act in accordance with the principal's objective". Further, investors appear to be primarily concerned with moral hazard in terms of entrepreneurs' inability or lack of effort to allocate capital and to recognise serious problems that could threaten their firm's survival (Arthurs and Busenitz, 2003; van Osnabrugge, 2000). Surprisingly, investors neither directly nor indirectly addressed moral hazard in the form of entrepreneurs' consumption of perks (Arthurs and Busenitz, 2003).

Investors' pre-investment screening criteria are similar to the information they demand during investment: entrepreneurs' soft factors, the product or service attributes, the start-up's financial status, and the market characteristics before making an investment decision (Landström, 1998; Lumpkin and Ireland, 1988; Tyebjee and Bruno, 1984). During the investment period, investors demand information on the start-up's financial and non-financial performance but disregard the market's and entrepreneurs' characteristics. Arguably, investors still evaluate market characteristics during investment but they do not demand related information from the entrepreneurs and instead generate it themselves. Further, information on how the start-up will treat market factors was already received pre-investment. Information on the entrepreneurs' characteristics might not be required, as the investors' informal contact with the entrepreneurs' substitutes for this information flow. Hence, investors arguably evaluate the start-up's performance along similar criteria before and during investment.

The agency theory (Jensen and Meckling, 1976) implies that investors perceive the agency risk to be similar before and during investment. The risk of adverse selection, which is reduced through pre-investment screening, appears to be similarly high to the risk of moral hazard, which is reduced through information demand during the investment.

According to Mitchell et al. (1995), the balance sheet, profit and loss statement, and cash flow statements are central to the information flow. Further, the authors say additional information, such as non-financial measures, do not challenge the primacy

accorded to the conventional accounting reports. Our results indicate differently: Although financial information was demanded by all investors, and supplied by start-ups with the available financial data, investors expressed that information reflecting start-ups' performance is most valuable to them. Especially in the case of pre-seed start-ups, investors consider non-financial KPIs to reflect the start-up's current performance more adequately than financial information does. Venture capitalist 'T' states:

> "We also receive non-financial performance indicators. Those are, to be honest, even more important [than financial indicators] for early-stage investments. Most financial information has limited validity; only high-level metrics are useful."

The discrepancies between our results and those of Mitchell et al. (1995) might be attributable to differences in the composition of study participants. Mitchell et al. (1995) focused on venture capitalists, whereas our study involves investors with less strict reporting requirements than is typical for venture capitalists. Further, half of the participating venture capitalists in Mitchell et al.'s study supported start-ups in later life cycle stages, which might also explain investors' focus on financial information.

5.2 Generation of information in start-ups

We find that accounting is a fundamental support function, necessary to ensure firm survival. This mirrors Croll and Yoskovitz (2013), who suggest that the analysis of performance data provides a counterweight to entrepreneurs' hyperbole. According to investor 'ZZ':

> "Accounting […] is very important. Although it does not directly create value – only the fact that the numbers are neatly in order does not mean that the business is successful – it prevents the destruction of value and allows us to have control."

Achleitner (2002) and Wittenberg (2006) theoretically derived start-up–specific requirements for designing management information systems based on start-ups' characteristics. Our findings highlight that the majority of those requirements are applicable in practice. Information systems appear to be central, as they track the start-up's overall development, controlled by the founders. Few start-ups report that they have established information systems for different departments.

Further, start-ups' systems are basic but flexible, as most calculations rely on Excel spreadsheets and the data is largely automatically generated (for example, from the back end of the start-up's website). Additionally, a range of entrepreneurs stressed the importance of cash, and non-financial KPIs were seen as fundamental performance measures as an alternative to financial KPIs. The degree to which the start-up's accounting system is adapted to, and hence compatible with, external stakeholders' requirements appears to be limited.

5.3 Information exchange between investors and start-ups

Our results do not indicate information exchange procedures to be homogeneous. As two investors explain:

> "This [information supply] varies from start-up to start-up. We cannot develop standardised reports, as the performance metrics are, besides some basic

> financial performance indicators, individualised for each start-up. […] For example, we have a portfolio start-up that has developed an app. We track the number of downloads to measure the performance of this start-up. Another start-up is a hard-core e-commerce business. In this case, we primarily track the revenues." [Investor 'J']

> "The [accounting] reports contain a KPI part that includes non-financial performance measures […]. This part of the report is adapted every few months for each start-up as the KPIs change that have to be optimised. […] Although our portfolio start-ups are very similar to each other, the applied KPIs differ across life cycle stages and, of course, across business models. Those are the two main influencing factors." [Investor 'N']

Those quotes suggest that the type of information exchanged is influenced by a start-up's business model and life cycle stage. This is in line with previous research clustering proposed performance metrics along start-ups' business models and life cycle stages (Croll and Yoskovitz, 2013). Additionally, Sandino (2007) states that a start-up's strategy – and hence, business model – determines the choice of the initial management accounting system. Further, life cycle theory suggests that organisational characteristics change over a start-up's life cycle. As information systems must be internally consistent with the start-up's characteristics in the respective life cycle stage, they also must change along the start-up's life cycle stages (Moores and Yuen, 2001). Data grouping further supports this finding: The homogeneity of applied performance measures increases when the start-ups are grouped along their life cycle stages.

However, no evidence exists that the start-up's characteristics influence the frequency and channel of information exchange. Rather, it appears this aspect of the accounting relationship is determined by investors' characteristics. Start-ups supported by more than one investor type report that the frequency of information supply and the importance of an informal or formal information exchange differ across their investors. For example, 'o' states:

> "We have a very large investor base [… that] can be divided into two parts. On the one hand, we have the advisory board, which is formed by those four investors that have the largest share in the company or have the largest strategic influence. We have a very intense relationship with those investors, as we have at least four times a year extensive strategy meetings, and in the meantime, additional [informal] meetings during which we discuss strategic issues. On the other hand, the remaining 15 investors are only updated in a written form about the start-ups' recent development. The additional informal contact is limited or nonexistent for some investors."

Start-up '*r*' reports that communication with most investors is limited to a formal meeting, while contact with business angels also invested in the start-up is more intense. This can be attributed to the fact that business angels provide comparatively more non-financial support, leading to an additional informal exchange of information.

Those statements suggest that differences in the characteristics of investor programs, such as in the size of investment or volume of non-financial support provided, influence the frequency and channel of information exchange. Arguably, differences among investor types influence the frequency and channel of information exchange. In our interview data, the homogeneity of statements regarding the channel and frequency of information exchange increases when grouped along investor types. Interestingly, the grouping provides evidence that differences in the frequency and channel of information exchange are largest between incubators and venture capitalists.

As the supporting activities offered by those investor types also exhibit great differences, the differences in accounting practices are presumably attributable to differences in investors' programs. For example, incubators focus on non-financial support over a short period, while venture capitalists mainly offer financial support on a long-term basis. This finding also aligns with Jensen and Meckling's (1976) agency theory. Additionally, Eisenhardt (1989a) found that an increased duration of collaboration negatively influences the agency costs, as principals learn about the agent during the support period and can more readily assess the agent's behaviour. As agency costs influence the volume and frequency of information demanded, it follows that a longer investment period is associated with less restrictive investment requirements.

Clustering the cases across investor types reveals that the similarity of statements on the reports' content only slightly increases. It becomes evident that some investors who foster additional informal information exchange receive supplementary information on the start-up's operating activities. Lumpkin and Ireland (1988) state that significant differences exist in the application of screening criteria among their researched incubators, and they suggest these variances might result from differences in the investors' focus on a certain business type. Additionally, our comparison of different investor types' screening criteria supports the fact that the information required varies to a limited degree across investor types. The comparison reveals that the examined incubators, venture capitalists, and business angels apply similar screening criteria pre-investment and that only minor variations exist in the relative importance of selection criteria across investor types. Thus, the data and literature suggest that the information exchange between investors and start-ups can be standardised only to a limited degree. This can be attributed to differences in the characteristics of start-ups and investor types. Arguably, the start-up's characteristics influence the type of information exchange, and the investor type's characteristics mandate the channel and frequency of information exchange.

Our results suggest that investors and start-ups have different understandings of the role of information, as investor 'N' explains:

> "Regular reports are very important for us; they are the main source of information to evaluate the performance of the start-up. Hence, the reports must be prepared properly by the founders and analysed carefully by us. The numbers help us to detect problems before it is too late to react."

Investor 'H' even expresses:

> "I would never again invest into start-ups that are set up by a team that has no clue of accounting or reporting."

By contrast, although the vast majority of start-ups measure their performance, the data suggests that entrepreneurs perceive accounting to be an undesirable task. Certain interviewees directly stated that they prefer to spend their limited resources on activities they consider more important to their business' success, with 16% of start-ups considering accounting to be negligible. Start-up 'b' says:

> "Our main target is to bring the product to the market as fast as possible. We do not care whether some tasks are not executed during this phase. At the moment, we do not see the need for a complex accounting system."

Only entrepreneurs managing start-ups at a later stage appear to realise the importance of accounting data. Start-up 'j' explains:

> "If a founder tries to build a company with all of his power and energy, reporting is the most annoying thing in the world. On the other hand, looking back, I would now be very angry with myself if I had not created a clear accounting and reporting system from the beginning."

To address perceptions of accounting's importance, investors 'H' and 'S" report that they have adapted their accounting requirements to the start-ups' abilities and developed a pragmatic reporting approach:

> "At the beginning, our reporting requirements were too strict. However, we adapted the requirements over time based on our experience, and we believe that we have now found an adequate cost-benefit ratio." [Investor 'H']

> "It is important for us to […] maintain a good relationship [with the start-ups]. Hence, we never demand any unnecessary information from the founders. We only demand information which we expect the founders to use themselves for the purpose of their internal controlling." [Investor 'S']

Some investors said they actively support start-ups in generating information. Investor 'Y' explains:

> "It does not make sense to exert pressure, as were are sitting in the same boat. Once we have invested, it is our idea and business. It is rather our job to support the founders with regard to number-crunching."

Support comes in the form of providing Excel templates and reporting formats or through the joint development of reporting structures (Bassen and Gröne, 2003). Our analysis shows, for example, that one-third of the investors support their start-ups in deriving suitable KPIs or developing accounting formats. Further, the investors said that while they aim to encourage the entrepreneurs to establish adequate information systems, they do not exert pressure. Investor 'X' states:

> "We would never force the founders into any reporting structures. We do not want the founders to design ten different reports for different investors."

Hence, investors clearly intend to minimise discrepancies by adapting their information requirements, supporting the start-ups in generating information, and encouraging – not forcing – the start-ups to provide adequate accounting. These findings are supported by previous literature: For example, Mitchell et al. (1995) and Sweeting (1991) also found that investors appear to assist in the development of accounting or planning systems.

Conversely, start-ups' efforts to close the gap seem limited. Some investors said that entrepreneurs signal that they are interested in maintaining good relationships and, hence, mostly provide the required information without complaint. Investors also reported that start-ups are thankful for their assistance. However, only three of the start-ups said they actively contact the investors to understand their reporting requirements and to adapt their reports accordingly. This implies that a limited number of entrepreneurs proactively supply information to satisfy their supporters. The literature in this field echoes these conclusions. For example, according to Nietzer (2003), a general deficit exists in the quality and quantity of information delivered to investors; entrepreneurs' lack of understanding on the need for systematic reporting and their limited capabilities in this field might be one reason for this deficit.

Relating investors' and start-ups' efforts to decrease discrepancies to agency theory, it could be argued that investors are indeed interested in mitigating the agency conflict, as their efforts to improve the information flow are greater. This is reasonable because

investors, as principals, are primarily interested in the information flow, while the start-ups should be reluctant to supply information, according to agency theory. It remains to be answered whether the start-ups do not put effort into improving the information flow due to their limited resources or understanding of accounting, as they aim to keep the information flow limited. Hence, while some investors consider accounting to be an important part of the relationship, some entrepreneurs do not, or set their priorities differently.

6 Limitations and future research

First, as the study is qualitative in nature, its results are only representative with regard to the selected target group and might not be open to generalisation. However, our findings do add to the broader understanding of start-up–investor relationships (e.g., Kollmann and Kuckertz, 2006; Linder and Sperber, 2020). Additional research would be beneficial to empirically test and confirm our findings. Second, we conducted interviews with only one representative per participating organisation. Consequently, the information provided might have been biased by the interviewees' views on accounting activities within their organisations. We mitigated this to some extent through the multiple case study design and the initial online research on the organisations of those interviewed to assess facts mentioned during the interview. Noteworthy, although some of the investors in our sample offer different types of financing (e.g., debt financing and equity financing), we have not distinguished between by the type of financing in our analysis. However, we believe that this is an exciting avenue for future research because the different types of financing may be accompanied by different requirements for the start-ups' information systems. Third, only two factors – investors' affiliation with an investor type and start-ups' affiliation per life cycle stage – were isolated as determinants of information exchange. Considering the entrepreneurial landscape is largely heterogeneous and that interviewees' statements were somewhat homogeneous, additional influencing factors must be analysed to ultimately identify what determines the information exchange between start-ups and investors (Dreiling and Bican, 2022; Keidel et al., 2021). We propose considering, among other factors, the impact of a start-up's (digital) business model on information exchange, as this factor surfaced during the interviews (Bican and Brem, 2020a; Hommel and Bican, 2020). Intellectual property like patents may provide information on start-ups as well (Bican et al., 2017; Conley et al., 2013; Guderian, 2019). Additionally, start-ups' financing rounds and growth rates have been shown to influence the design of start-ups' management information systems (Davila and Foster, 2007) and are expected to affect information exchange. Moreover, soft factors in the relationship between investors and the start-ups – such as the personal relationship between the representatives of both organisations (e.g., personal fit and trust) – should be analysed with regard to their influence on the information exchange. The interviews suggest that a trustful partnership spills over to the accounting relationship. This could be fascinating to investigate especially in the context of family businesses (Riar and Kellermanns, 2021; Riar et al., 2022a; Tao-Schuchardt et al., 2023) or other network types (Keidel et al., 2021). A relevant future avenue also exists in exploring how motivational affordances in information systems can cultivate information exchange, interpersonal relationships, trust, and cooperation between stakeholders (Morschheuser et al., 2017; Riar, 2020; Riar et al., 2021c; Riar et al., 2020). Fourth, future studies could conduct similar analyses in

other contexts, such as in North America or Asia. Comparing the results of those studies with ours would allow for assessing how cultural differences influence accounting practices. Additionally, these results might indicate how these practices could develop in the coming years, as other entrepreneurial landscapes, like those in the US Silicon Valley, are more mature. Gender differences and the effect of sustainability efforts may also be analysed (Endres et al., 2022; Hohl et al., 2021). Lastly, as information serves as the basis for mitigating the agency conflict between start-ups and investors, future research could analyse how investors process and use the information delivered for monitoring or contracting purposes and how to evaluate performance thereby (Bican and Brem, 2020b). Differences between legal and voluntary accounting information might play a role in this regard. As our data has been collected before the COVID-19 pandemic, future research might analyse the pandemic's effect on the information exchange (Guderian et al., 2021) and the role of contemporary trends and technologies that have gained traction during the pandemic, such as the Metaverse and immersive technologies (Bican et al., 2023; Riar et al., 2022b; Xi et al., 2022). These technological trends offer novel ways to share and present information while simultaneously creating a virtual environment for spatially dispersed people to meet, inducing a sense of 'being there' together and creating new potentials of socialising, communicating, and sharing information. Another possible extension of this study could be analysing whether and how start-ups manipulate the delivered information to positively influence the provision of capital. It would also be important to more deeply analyse gaps in the perceived importance of accounting to derive potential solutions. Further, it might be worthwhile to investigate empirically what role information systems, such as management control systems (Strauß and Zecher, 2013) and other formal or informal agency systems (Wilhelm et al., 2022), play in the behaviour of entrepreneurs which can have major implications for a number of firm-level outcomes, such as new venture growth (Yang et al., 2020).

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Notes

[1]The interview guidelines are available from the authors upon request.

[2]The percentages included in this section refer to the population of the 28 interviewed investors. Note that the investors' information requirements correspond to the information actively demanded by the investors and the information the investors would optimally like to receive.

[3]The percentages included in this section always refer to the population of the 25 start-ups interviewed.