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Capturing action from within: The use of personal diaries¹

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Abstract

This chapter discusses methods to study entrepreneurial behavior, practice, and process and advocates the use of personal diaries to capture entrepreneurial action and processes from within. It describes the diary research method, its origins and main references, as well as its strengths and weaknesses. An illustration of a study on networking actions serves to show possibilities but also challenges that come with using diaries in this type of research. We come to the conclusion that personal diaries are ideally suited, but underexploited data source for investigating entrepreneurial processes, especially in its early phases.

Keywords: Action, inside-perspective, diaries, social networks, process

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Introduction

Repeatedly, researchers have advocated that entrepreneurship should be studied as a process (e.g., Baron and Markman, 2005; Bluedorn and Martin, 2008; Gartner, Carter and Reynolds, 2010; McMullen and Dimov, 2013; Steyaert, 2007). Instead of considering the variables that lead to a particular outcome, as in variance studies, process studies are interested in how unfolding events impact next events and intermediate outcomes (Van de Ven and Engleman, 2004). Researchers have attempted to capture processes by studying chains of events over time, for instance in the development of new inventions (e.g., Berends, Van Burg and Van Raaij, 2010) or in describing changes in entrepreneurial networks (Hite and Hesterly, 2007d). Moreover, researchers called to pay attention to temporal aspects of entrepreneurial processes unfolding over time through relations between entrepreneurs, their resources, prospective clients, regulative agencies and so on (Su, Zhai and Karlsson, 2017).

Following up on calls to better capture the *processes* of entrepreneurial endeavors, this chapter aims to illustrate how these processes can be captured *from within* using diaries. An inside perspective on entrepreneurial processes aims to capture entrepreneurial agency as involving elements from the past, present, and future (Emirbayer and Mische, 1998). For instance, studies have started to explore how the entrepreneur's imagination of the future impacts networking actions in the present (Van Burg, Berends and Van Raaij, 2014). Yet, capturing processes from within is methodologically challenging, as this requires detailed accounts of how entrepreneurs perceive past, present and future as part of their emergent actions.

As a solution, we propose to attend to the use of diaries as way to collect such detailed accounts of entrepreneurial processes. Diary studies are seldom used in entrepreneurship, but they have the benefit of providing both actual objective information as well as personal interpretations and imaginations (Bolger, Davis, and Rafaeli, 2003).

Moreover, diaries offer frequent information on a daily or weekly scale and reflect people's nearly real-time experiences. Thus diaries are able to capture entrepreneurial processes from within, giving insights that are hard to get with other research designs (Bolger et al., 2003; Kaandorp, Van Burg, and Karlsson, 2019). It has been shown that patterns observed in diary data are significantly different from studies that use longer time intervals (Zaheer, Albert, and Zaheer, 1999). As diaries provide current data, in the middle of the process, retrospective construction and justification of events are avoided, which are key concerns when studying entrepreneurs (Bird, Schjoedt, and Baum, 2012).

Next we will briefly review outside and inside perspectives on process. Before discussing the use of diaries to illustrate the inside perspective on entrepreneurial processes, we will define and describe diary research, and its use in research in general and entrepreneurship research in specific. The use of diaries will be illustrated by a study on networking action of entrepreneurs.

Outside and inside perspectives on process

Following Jaques (1982) and others we distinguish two different views on process and time, which could be labelled as 'time' and 'temporality' (Schatzki, 2010). The *time* dimension of process depicts sequences and durations of events, and has been referred to as "chronos" or "objective time" (Schatzki, 2010). The time dimension views processes from the outside, focusing on succession of occurrences (Jaques, 1982; Schatzki, 2010), in which events are reconstructed as earlier or later (e.g., Poole, Van de Ven, Dooley, and Holmes, 2000; Van de Ven and Engleman, 2004). In this view entrepreneurial processes unfold "over time", which is how most empirical studies view processes.

In contrast, the *temporality* view on process refers to an entrepreneur's connection of past, present and future (Jaques, 1982). This is also labelled as "kairos" or "subjective time"

(Schatzki, 2010). In the entrepreneur's imagination and actions, the past and the future are living realities (Emirbayer and Mische, 1998). For instance, when entrepreneurs make investment decisions, these decisions are influenced by their recollected repertoire of past experiences as well as future expectations, as Dolmans et al. (2014) show in a study on the influence of resource positions on venturing decisions.

In most entrepreneurship research, however, time is only understood as *chronos* and not as lived temporality (Chiles, Bluedorn, and Gupta, 2007; McMullen and Dimov, 2013). Also most process research methods are geared towards understanding processes from an outside perspective. For instance, Langley (1999) and Poole et al. (2000) described how to capture processes as series of events, or temporal brackets. These methods have been applied in several studies (e.g., Berends, van Burg, and van Raaij, 2010; Halinen, Törnroos, and Elo, 2013; Reymen et al., 2015), although there are in general still only few studies that explicitly study processes (Langley, Smallman, Tsoukas, and Ven, 2013). Yet, methods that capture process from *within*, as *Kairos*, are even more scarce. Yet, such an internal view is essential to understand the drivers of changes in entrepreneurial processes, as entrepreneurial imagination is an important driver of entrepreneurial action (Cornelissen and Clarke, 2010; Schumpeter, 1934), and entrepreneurs also engage in reflection on their past, which in turn influences their current and future actions (Dolmans et al., 2014; Garud and Giuliani, 2013). Therefore, we need to investigate how entrepreneurs engage with the past, present, and future to motivate and perform their actions. Here, we argue, diary methods provide great tools to capture entrepreneurial action from within (and can also be used to construct an 'outside' perspective by spacing time units over time). Table 1 presents diary methods in relation to other methods to capture process.

----- INSERT TABLE 1 ABOUT HERE -----

Other methods to collect data about processes

Before we turn to diary methods, we briefly picture other prominent data collection methods for process studies. Drawing on Langley et al. (2013), we have chosen to compare diary studies with archival studies, ethnographic studies, case studies, and (quantitative) panel studies. As these types of studies are very diverse including many different variations, we have made a categorization from what we perceive as typical in each type of data collection. We acknowledge that a justified and exhaustive description of all studies in each type of data collection would be complex, gargantuan in scope and still limited. The comparison is made to assist those who are interested in diary methods specifically, to get an insight into why and when it could be useful to use it relative to other methods. First we make a short description of the characteristics of each type of study (except diaries, as will be described in length below), and then we summarize some key characteristics of these studies in Table 2.

Archival data

Archival data often consists of fairly uniform data sources with fairly regular event chronologies. These can be annual reports, newspaper articles on a specific topic or journal articles. It is often known roughly when they are created. Due to their long timeframes it is possible to see and relate changes in data to shifts and changes in resource availability and outcomes. The data itself is independent from the researcher, and therefore it becomes central for the researcher to track and show a rigorous, multisource base for interpretation. For example, the Wright and Zammuto (2013) study on first class cricket in England, the data contains 949 relevant documents including 354 minutes from governance meetings in British cricket, along with many other documents, during the period 1919-1967. The data is already generated, and if granted access, they could be relatively cheap to obtain.

Ethnographical data

Ethnographies are often concurrent in-depth and immersive studies. A significant amount of observation, interviews and documentation is called upon for creating immersion and proper understanding of the context and participants. Amount of time spent is often disclosed, and seen as a quality indicator in itself. Due to the scope of normal ethnographies, they are generally very time-consuming and costly. For example, Bruns (2013) spent six months half time, one-year full time in the research context. Observational notes spanned over 750 pages of single spaced text. The interpretation of the researcher, due to their immersion in the context often take an authoritative role, and the researcher can see causality which is difficult to see by outsiders or even other insiders. Given the long observational periods, it is possible for the researchers to see patterns of behavioral changes, and with e.g., interviews, it adds a possibility to understand the underlying reasons for these changes.

Interview data

Interview data, in particular used in case studies are one of the most prolific type of qualitative data collection methods in organizational process studies. Case studies often focus on one or a few cases, and with a multitude of sources, but often with a heavy reliance of semi structured interviews. Quite often there is more intense periods of data collection, but also quite some retrospective data collection in terms of archival data and post hoc interviews. For example, the study by Mackay and Chia (2013) is based on 30 interviews and 2 months of observations over a five year period, and the analysis was made after the data was collected in full, five years after the initial event. Analysis is made on events retrospectively, probably with retrospective interviews as a base. Findings illustrate the interaction between strategic decisions and contextual changes.

Panel data

Panel studies often use large scale survey or secondary data on annual or more fine-grained levels. They are often a uniform method for data collection, which can span very long time periods. The data is often unrelated to the researchers themselves, and similar to archival data studies, focus shifts towards interpretation of data, rather than the data collection in itself. In contrast to archival studies, analysis of the data is often made based on post-positivist assumptions, and utilizing established statistical methods for analysis (typically correlation based). The outcome of such statistical methods should ideally be replicable. However, the choice of analysis method, coding, cleaning of data et cetera makes this process difficult in practice. Patterns of developments are revealed through the analysis, and theoretically based presumptions can be confirmed or disconfirmed. For example, Klarner and Raisch' (2013) study investigated annual reports of 67 European insurance companies over a 10 year time period. Given the limitations of these data collection methods, in particular to capture process from an inside, interpretivist perspective, we now turn to diary methods.

----- INSERT TABLE 2 ABOUT HERE -----

Diary methods

We argue that diaries are a great tool to collect frequent, detailed data about entrepreneurial action that also capture personal reflections on past, present and future. Diary research represents a diversity of different data collection types, characterized by fine grained, self-reported data, typically captured daily or weekly. Typically, diary studies involve unstructured open respondent-controlled reports. However, diary studies can range in intensity from several reports per day, to weekly reports, and from unstructured to highly structured reports (Ohly, Sonnentag, Niessen, & Zapf, 2010).

Diary research offers a well spread methodology to investigate micro processes in a variety of different fields such as nursing (Bedwell, McGowan, & Lavender, 2012), pain

research (Palermo, Valenzuela, & Stork, 2004), organizational psychology (Ohly et al., 2010), marketing (Bagnall et al., 2014). Diary research encompass a variety of different research questions. Diaries already for quite some time provide the field of psychology with a powerful set of methods for studying various human phenomena, including personality processes (e.g., Fabes & Eisenberg, 1997; Rhodewalt, Madrian, & Cheney, 1998), marital and family interaction (e.g., Almeida, Wethington, & Chandler, 1999; Repetti & Wood, 1997), and physical symptoms (e.g., Suls, Wan, & Blanchard, 1994).

Till now, diary studies are fairly uncommon in the field of organizational research. Ohly et al. (2010) came up with only 23 studies in their review of diary studies. However, in entrepreneurship, diary studies are even more uncommon. In a review of 3749 journal articles conducted in all entrepreneurship journals, in the period 1985-2013, McDonald et al. (2015) found that 1720 were based on survey data, 519 were categorized as case studies and only three were using diary studies.

Diary research is uncommon in management, and rare in entrepreneurship (with some exceptions like Kaandorp, Van Burg, and Karlsson, 2019). Nevertheless, diaries methods are promising as they are able to answer several important research questions with respect to entrepreneurial behavioral practice and related processes. Strengths of diary research include: Diaries can capture affective states, energy vigor, including aspects that may vary from day to day and from week to week. Diaries do not need to presume stability of variables. This is an advantage when it comes to process studies, in comparison to for example survey designs in which process typically is restricted by assumptions of variable stability over time (Ohly et al., 2010). Diary writing is also a fairly familiar activity that can be taken up by respondents with relative ease, thus smoothening data collection and reliability. Another advantage is that diary writing is applicable to respondents in a large variety of different situations, stages and positions.

Moreover, respondents often have some discretion over what to write about. This is an advantage and a disadvantage. The advantage is that the entrepreneur can keep it relevant to them, and is able to signal to the researcher what they see as major opportunities, plans, goals and problems. On the other hand, it makes it harder to ensure that all respondents report the same amount of information on the same topic. Diary writing facilitates development of learning through reflection, facilitates metacognitive development and is conducive to development of self-regulated learning (Wallin & Adawi, 2017). Particularly solo entrepreneurs can use this to facilitate reflection, learning from mistakes and internal dialogue. Therefore, it is potentially more easily understood as valuable to entrepreneurs.

From a methodological view, the fine-grained report of daily or weekly thoughts and activities over time improves possibilities to understand response “biases”. By repeated responses, the character of individual responses can be understood and triangulated over time. Rather than a bias, it becomes part of the characterization of respondents’ thoughts and behaviors. Diary writing reduces hindsight bias in comparison to most surveys and case studies. Diaries are normally written by the end of the day or end of the week, and thus fairly recent. Surveys and case studies often ask respondents to reflect over decisions and results that are months or years old.

Narrative diaries can be written or (self-)recorded using available recording devices such as on smart-phones. In narrative diaries people are typically asked to tell about a small number of questions, such as: What did you do in the last week? (capturing actions in the past); What are you going to do? (capturing intended future actions); Who did you meet? (capturing network contacts); How did you feel? (capturing emotions); Why did you do what you did? (capturing reflection and decision making); or: What did you learn? (capturing reflection on learning). The open-ended nature of these questions enables people to report as natural as possible and reduces probing effects. To guarantee the quality of these diaries

when using them for research, it is important that these diaries are not used for evaluating the respondents (as this might trigger over-reporting of positive actions and under-reporting of negative aspects).

Besides narrative diaries, recent studies have employed structured mini-survey diaries, for instance asking two questions every day, or as many times the respondent likes. Such types of data-collection are enabled by apps that notify the respondent to quickly grade a few questions (Lida, Shrout, Laurenceau, & Bolger, 2012; Lackeus 2020 in this volume). Although such use of diaries is also very relevant for entrepreneurship studies, in this chapter we will focus on narrative diaries that can capture more of the richness inside entrepreneurial processes.

Illustration: Capturing networking actions

Over the last years, we have been working on a research project to unravel how entrepreneurs create their initial network, the results of which are recently published as Kaandorp, Van Burg, and Karlsson (2020). We studied 55 entrepreneurs setting up 28 ventures in unfamiliar environments. These cases were drawn from two years of a Venture Creation Program in Sweden. This program focuses on helping participants with starting new ventures. In this process they are supported by mentors and training staff. The program took 20-weeks, which was devoted to writing business plans, to actually work on getting the venture off the ground, and to network with investors and others, including during a trade show.

This program has the unique feature that many entrepreneurs are foreigners without previous relevant contacts in their industries in Sweden. About half of these entrepreneurs did not have relevant social connections that they could utilize, and thus they had to build their networks anew. Besides this major characteristic – that divides our sample in people who have and people who don't have relevant contacts at start – on other characteristics the

participants were relatively similar. Most of them were in their twenties, they all took part in the same program, and they all had a university degree. These sample features improved internal validity and enabled a focus on the differences in networking.

To be able to capture network action from within, we collected 859 diaries, weekly written by the entrepreneurs. As startup processes are prolonged often 2-3 year long processes, we settled for a weekly reporting structure, assuming that it would give a reasonable signal to noise ratio. Submitting the diaries was voluntary but encouraged; the task to write diaries was introduced before the start of the program. The diary guidelines prescribed that everyone should report what they did during the last week, including whom they met and why they engaged in actions. Moreover, they were asked to write an overall reflection on what they learned during the past week. The program's purpose of the diary was to enhance reflection on behavior and increase the entrepreneur's skills to self-regulate behavior, as well as improve their meta-cognitive capacities (e.g., Flavell, 1979; Haynie, Shepherd, and Patzelt, 2012). The diary entries varied in length from roughly half a page to two pages. These data were complemented with business plans, other documents, and real-life observations from one of the authors who was engaged in the program.

Data analysis

Our data analysis involved three steps. The initial step was to create initial understanding of the individual entrepreneurs and/or teams of entrepreneurs. In the second step, multiple aspects of networking actions were coded, centering on attempts to contact others and subsequent networking actions. As a third step, these networking attempts were coded with a focus on the longitudinal patterns, using both qualitative and quantitative representations. These steps will be discussed in more detail in what follows, to illustrate the type of analysis that is obtainable through diary studies.

Next to these diary data a substantial amount of additional secondary data was collected. This data was used to create basic understanding of each of the venturing attempts, using business plans, direct observations and admissions information. We coded attempts of entrepreneurs to contact relevant others based on the individual diaries. Contact attempts were coded when we observed some sort of communication between the entrepreneur and other actors mentioned in the diaries. This intentionally included situations in which an entrepreneur tried to make a connection but failed to do so, for instance by calling someone but failing to reach the contact. As our analysis was at the venture level, but the coding at the individual level, we had to aggregate all contact attempts to the level of the venture team (ranging between 1 to 4 people in one team).

As prior studies examined preexisting, relevant social ties in the case of new ventures, we also considered the relevant contacts an entrepreneur had prior to starting the venture. Following our coding of this aspect of the pre-existing networks, 17 cases could be considered as pre-embedded, as they referred to at least one relevant connection of one of the entrepreneurs. The majority of these was actually exploiting university-provided ideas, and thus was able to use contacts through university employees. In some of the other ventures, the entrepreneurs referred to family members, friends or colleagues. We characterized 11 cases as unembedded, as we did not identify relevant contacts prior to starting the venture.

Coding

Coding was performed by three coders (the authors). The authors coded the diaries for actors, networking actions, how the entrepreneurs dealt with responses to contact attempts, reflections on networking actions, and performance aspects such as funding or achieving sales. To create agreement on the coding approach, the authors initially jointly coded three cases. Next, one of the researchers continued coding the other cases. When there was

disagreement around interpretation of excerpts or about codes, these differences were discussed and resolved among the three researchers based on close and careful examination of the diary data. Next, we review the main codes used to analyze the enormous amount of diary data.

Actor coding. Actors were coded by checking the diaries for names of actors or categories indicating a certain actor. Next, these instances were coded based on the personal name or company name. If it was impossible to identify a personal name or company name, a category was used (e.g., financier in place X). Actor names were checked using secondary data such as business plan data, observations, and other available documents.

To enable differentiating between different types of actors, the contacts were coded as either new contacts, program-provided contact, or existing contact. We also categorized contacts according to function e.g. (financier, customer, supplier, advisor, idea provider). We used this data to calculate Blau indices (Blau, 1964) and checking for differences in network diversity over time and across cases. While the diversity tests did not result in any significant effects related to performance, it does illustrate the quantitative type of analysis that is possible to employ when analyzing diary data.

Network action coding. The diary data not only facilitated coding the type of contact and status of the contact. The data also enabled to inductively develop clusters of networking actions. To do this in a meaningful way, each network activity was given a date/month, using the date on which the diary was submitted; subsequently we differentiated between first and follow-up contact attempts in cases where the contact was not responsive. We also coded if new others were contacted through referrals, or rather by means of reaching out to previously unknown individuals, through cold calling. Moreover, entrepreneurs had a range of strategies or approaches to deal with responses of actors. We coded responses from doing nothing, to persistently pursuing an actor, or approaching alternative actors.

Reflecting on networking actions. An important aspect of the diaries is that they had information regarding how the entrepreneurs reflected on their own actions. These reflections for instance related to their perceived progress, emotional reactions, and what motivated them to carry on. By coding and interpreting these reflections, we gain better understanding of how entrepreneurs and entrepreneurial teams deal with successes and disappointments in their networking actions.

Process analysis

In the third step of the diary analysis, we created visual representations for each of the cases to capture the network development of that case (Langley, 1999). In order to create comparable graphs for each case, we constructed artificial four-week program periods which were used as standardized months that excluded periods in which the program did not run (e.g., during the Christmas holiday). This gave five four-week periods. To analyze the number of new contacts in each period, we analyzed the actors that were written down for the first time in that venturing team. Contact attempts for actors that were not mentioned before and were not a pre-existing contact, were coded as new contact attempts. Next, we created graphs depicting the overall number of actors, newly added actors during the same period, overall networking activity and networking outcomes.

In addition, as overall indicators of network development in each venture, the number of contacts approached was calculated, as well as the duration of the interaction. This duration reflected the extent to which those contacts had been iteratively approached in consecutive months (i.e., if someone was mentioned in the two months beyond the first time they met, the duration is 2 months).

In sum, our novel approach to studying social networks by using weekly diaries led to an interpretation of how in each case the entrepreneur(s) developed a network (see Kaandorp,

Van Burg, and Karlsson, 2020). This gives insight in characteristics of initial network formation, shows how new contacts are followed up upon, and how network actions and evaluations evolve over time. The results, through careful coding of the diaries, primarily showed that important differences in network development between the cases were driven by differences in evaluating self, others and the networking process. All entrepreneurs had to work really hard to establish initial networks in their unfamiliar settings and over the course of time they encountered often that it was difficult to really create good relationships with new actors. Yet, some of the entrepreneurs got disappointed and demotivated by such results and started to evaluate their networking actions as something that is really difficult. Instead, they focused more on internal development of the firm, for instance by working on the business plan. In effect, their network never really got off the ground. In contrast, entrepreneurs who evaluated themselves, others and the networking process in a more productive way, positively, were able to maintain good levels of networking activity and by their perseverance eventually the network starts to emerge. Only by attending to an inside perspective on initial network formation, using personal diaries, these differences in evaluations could be identified.

Discussion and conclusion

In this chapter, we have set out to describe diaries as a way of collecting data about entrepreneurs. We argue that diaries have a large potential for entrepreneurial process studies, as they are rich in data, temporally granular, and are helpful ways to encourage self-learning. While the method is uncommon for entrepreneurship researchers it is more common in other fields of research. Since diary writing is a well-known activity, it comes fairly natural for most respondents to engage in it, after some instruction. As our example shows, diary studies provide a possibility to reduce retrospective bias, establish timeline and frequency of

activities, as well as looking into the motivations, perceptions and emotions surrounding the dynamic process of social network creation in nascent organizations. It lends itself to both quantitatively based analysis of processes based on the frequency and fine-grained reporting, as well as inductive theory development. Diary studies have its limitations as most other methods. They are affected by individual writing styles, could have a high noise to signal ratio and requires demanding analysis. Nonetheless, we would like to encourage more research done with this methodology. We believe that diary studies are particularly well suited as a research method to study such a dynamic, emotional, and diverse empirical setting as entrepreneurial behavior, practice and process.

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Table 1: Capturing processes in entrepreneurship

	Event-based studies	Single case study	Comparative case studies	Panel study	Diary studies
Description	Processes are studied by collecting data on change events that are perceived important (by the entrepreneurs) in a certain process.	Tracing change in a particular process in a single case	Comparing change processes in multiple cases.	Collecting data in multiple waves through surveys among the same sample.	Collecting daily, weekly or monthly data by short self-reported diaries.
Aspects of process being captured	Type and magnitude of change, type of event, relationship between different events, order of events, patterns in how events are related (i.e., linear, converging, diverging).	Drivers of change, changing identities, changes meaning and interpretations.	Variables that influence particular outcomes such as performance.	Change in variables that are being surveyed repeatedly.	Pace and frequency of behavior, inactivity, interpretation of environments, emotional and motivational fluctuations and effects.
Ontological and epistemological assumptions	Events are concrete, observable instances. Process can be captured from the outside.	Interpretivist assumptions. Meaning and interpretations are important. Processes of 'becoming' need to be captured from the inside.	Post-positivist assumptions, search for facts. Process can be captured from the outside.	Post-positivist assumptions, search for factual changes in observable variables. Process can be captured from the outside.	Interpretivist assumptions, sometimes post-positivist search for factual changes. Both inside and outside perspectives can be used.
Key methodological source(s)	Poole, Van de Ven, Dooley, and Holmes (2000)	Gioia et al. (2012), Langley and Abdallah (2011)	Eisenhardt (1989), Eisenhardt and Graebner (2007), Yin (2003)	Greene (2000), Reynolds (2004)	Bolger, Davis and Rafaeli (2003), Ohly et al. (2010)
Example	Berends, Van Burg, Van Raaij (2010) studied the interaction between individuals and organizations in the longitudinal development of an aircraft material.	Alvarez, Young and Woolley (2015) studied opportunities and institutions in the king crab industry.	Karlsson and Honig (2009) studied the institutional sources, influence, strategies and outcomes of nascent organizations.	The panel study of entrepreneurial dynamics (PSED) collected data from the entire population to identify people who were in the process of starting businesses and subsequently followed them over time (e.g., Reynolds et al., 2004; Reynolds, 2006)	Kaandorp, van Burg and Karlsson (Forthcoming) studied social and business network development, motivation and process among nascent entrepreneurs.

Table 2. Comparing different data collection methods to capture process

	Archival data	Ethnographical data	Interview data	Panel data	Diary data
Enables what type of analysis	Quantitative Qualitative (event-based, case-based)	Qualitative (case-based)	Qualitative (event-based, case-based)	Quantitative	Quantitative Qualitative
Duration of data collection	Years	Months-years	Months-years	Months-years	Days, weeks, months, years.
Key interpretation problem	Source-reality	Researcher-reality	Researcher-source	Analysis-interpretation	Actor-reality
Salience	Behavior and materiality	Behavior	Context-individual interaction	Correlations	Cognition and interpretation
Capturing uncertainty	Post hoc	In situ	Post hoc and sometimes in situ	To be surveyed	In situ
Researcher centrality	Peripheral	Central	Central	Peripheral	Peripheral
Actor centrality	Peripheral	Central	Varying	Peripheral	Central
Typical data delay	Years	In situ	Months	Months	Days
Data cost per respondent	Low	High	High	Medium	Low
Granularity	Low	High	Varying	Low	High

Author biographies

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Dr Tomas Karlsson is associate professor of entrepreneurship at Chalmers University of Technology. He holds a PhD in business administration from Jönköping International Business School. Tomas's research primarily focuses at new venture creation, entrepreneurship education and business planning. His research has been published in leading journals such as Journal of Management, Journal of Business Venturing, and Entrepreneurship Theory and Practice. He is currently on the editorial board for Academy of Management Learning and Education and in the review board for Entrepreneurship Theory and Practice.