

# Towards Mindful Case Study Research in IS: A Critical Analysis of the Past Ten Years

## Abstract

Case study research (CSR) has gained strong acceptance in information systems (IS) research in the recent decades. This article examines how CSR has been used in IS research practice. Contrasting the currently used CSR approaches to methodological prescriptions can lead to recommendations for researchers applying this research strategy as well as to advances in the methodological literature. Our study design comprises two steps. First, we identified case studies published in six major IS journals from 2001 to 2010. Second, we critically examined CSR practices in the identified studies. We observed a dualism, as CSR currently consists of a positivist and an equally strong interpretive research stream. Case studies with other philosophical underpinnings were rarely found. We describe the CSR practice and contrast it to the methodological prescriptions. Thereby, we clearly point out the shortcomings, aiming to initiate a debate on how our community should further develop its use of CSR to become more mindful. This study is the first broad examination of CSR in IS (focusing on more than just the positivist research stream) and thus contributes to the methodological literature by providing recommendations for improvements.

Keywords: case study research; critical analysis; information systems; mindfulness

## Introduction

The use and acceptance of information systems (IS) case study research (CSR) has been growing strongly in the recent decades (Paré, 2004). At present, about one fourth of all empirical articles in the major IS publications report on case studies (see section *Analytical Approach* for more information), emphasising

the importance and relevance of CSR for IS research. CSR 'examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of confronting theory with the empirical world' (Piekkari *et al.*, 2009, p. 569). CSR is particularly useful for investigating broad and complex phenomena that are currently insufficiently explored, thus prohibiting causal questions (Benbasat *et al.*, 1987; Paré, 2004; Yin, 2009). It allows a holistic, in-depth investigation of phenomena that cannot be studied independently from the context in which they occur. This makes CSR a very important research strategy for IS research, as a system cannot be separated from the context in which it is implemented and deployed (Orlikowski, 1992).

Philosophical assumptions strongly affect the selection of methods and have a heavy influence on the shape of the resulting research design (Orlikowski & Baroudi, 1991; Mingers, 2001). In general, methods are closely coupled with certain underlying philosophical assumptions. We comprehend CSR as a research strategy, as it enables application of different research methods and is compatible with different philosophical assumptions. Consequently, philosophical issues arise when researchers design and execute their case studies. Thus, CSR can take different stances, potentially leading to a diversity of CSR approaches in use (Orlikowski & Baroudi, 1991).

In the past, positivism was the predominant philosophical paradigm adopted by most IS researchers conducting case studies (Orlikowski & Baroudi, 1991; Dubé & Paré, 2003; Chen & Hirschheim, 2004). Methodological authorities on CSR, such as Yin (2009) and Eisenhardt (1989), propagate this positivist approach, which stems from the natural sciences. Therein, an objective reality is believed to exist independently from the observer (Walsham, 1995a). The world can be comprehended by identifying unidirectional cause-effect relations and rules not bounded in context and time (Orlikowski & Baroudi, 1991).

Interpretivism is an alternative philosophical paradigm that has emerged in IS research (Walsham, 1995b). In contrast to the positivist research tradition, interpretive researchers view reality as a socially

constructed product (Walsham, 1995a; Klein & Myers, 1999). From their perspective, the understanding of phenomena is driven by the meaning that people assign to them (Klein & Myers, 1999).

Critical research constitutes a third philosophical paradigm (Orlikowski & Baroudi, 1991). In contrast to positivism and interpretivism, researchers devoted to this paradigm do not only aim to understand and explain phenomena, but also to challenge established social structures and control in organisations as well as society (Cecez-Kecmanovic *et al.*, 2008; Klein, 1999, Klein, 2009). Regarding IS research, critical researchers particularly focus on investigating and questioning the role information systems are expected to play in this context (Cecez-Kecmanovic, 2011). Critical researchers take explicit value position and therefore need to deal with moral and normative-ethical concerns (Cecez-Kecmanovic, 2011; Stahl, 2008).

Given the significant differences between the aforementioned philosophical paradigms, diverse approaches for conducting CSR may emerge. Additionally, these differences might pose a risk of leading to fuzzy research designs. If researchers use published case studies as blueprints for their studies without questioning these studies' fit with their own case study's goals and philosophical foundations, flawed disciplinary conventions may arise. This might occur as scientific techniques and strategies become normalised as well as standardised and develop into conventions within scientific communities (Piekkari *et al.*, 2009).

A thorough examination of how CSR is used can lead to improvements in its application. In particular, misleading conventions can be identified and innovative approaches can be highlighted. Consequently, methodological literature and CSR practice will further improve. We therefore pose our research question: *How has CSR been practiced in the IS discipline?*

Despite the vast body of methodological literature on CSR (e.g., Darke *et al.*, 1998; Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Klein & Myers, 1999; Paré, 2004; Walsham, 1995a; Yin, 2009), there is

paucity of studies on how this research strategy has been performed by IS researchers. In the recent past, three studies with similar intentions were published in IS journals. Benbasat *et al.* (1987) analysed four (positivist) case studies in the field of IS and gave recommendations on how to further improve CSR practice in IS. The authors call for researchers to more clearly demonstrate how their research topics fit into the knowledge-building process, their case selection criteria and data collection processes. Lee (1989) examined positivist single case CSR. By analysing eight case studies, he explained how to reach replicability and generalisability with such studies. Dubé & Paré (2003) analysed 183 positivist case studies published between 1990 and 1999 and compared their research designs with methodological recommendations found in the positivist methodological literature on case studies. They argued for more rigour in conducting CSR.

Our study now draws attention to the increasing number of interpretive studies (Mingers, 2003; Walsham, 2006). Therefore, we analyse the positivist and the interpretive CSR approaches in use, as these are currently the major streams in the field of IS. Currently, the body of case studies using different approaches, such as critical research, is not comprehensive enough for a thorough and meaningful analysis of those (e.g., Liu & Myers, 2011; Myers & Klein, 2011). Since no studies comparable to ours exist in the IS field, we analysed literature in related disciplines and selected one study in which the authors conducted an analysis of the two CSR streams in the field of International Business (Piekkari *et al.*, 2009) as a starting point for our analysis (see section *Analytical Approach*). We draw evidence by analysing all 327 case studies published between 2001 and 2010 in six major journals in our field, the Senior Scholars' Basket of Six. We believe that case studies published in these highly reputed and widely circulating journals are examples of outstanding practice and thus shape our perceptions of how CSR should be performed.

We found that the practice of CSR in our discipline has developed further during the last decade, as we observed a dualism. CSR currently consists of a positivist and an equally strong interpretive research

stream. We describe the observed practice within both streams and discuss deviations from methodological literature and their consequences. Thereby, we clearly point out shortcomings of the current CSR practice and derive recommendations for improvement. Our aim is to initiate a debate on how our community should further develop its use of CSR. We argue for more mindfulness regarding the design and accomplishment of such studies. By 'mindful CSR', we mean that researchers should not blindly follow blueprints given in previously published case studies, but rather carefully revise different possible design alternatives (for a similar definition of mindfulness, compare Langer, 1989; Langer & Moldoveanu, 2000). All design decisions should be made consciously with regard to the specific research situation. Case study researchers should be open to, and sometimes try, new approaches in order to tap into the full potential of this research strategy.

## **Theoretical Background**

According to Piekari *et al.* (2009), conflicting views about CSR 'ultimately stem from differences in philosophical assumptions' (p. 569). In the introduction, we have highlighted some differences between the positivist view on CSR and its main alternative, the interpretive tradition. The adoption of positivism or interpretivism leads to competing assumptions about how to apply CSR. In this section, we briefly contrast positivist and interpretive methodological prescriptions for four dimensions: theorising, study design, case selection and data sources (cf. a similar structure Piekari *et al.*, 2009).

### **Theorising: Nomothetic versus Idiographic**

Different approaches exist regarding how insight is to be gained from theorising (Lee & Baskerville, 2003). Case studies rely on analytical, rather than statistical generalisation (Meredith, 1998; Dubois & Gadde, 2002; Lee & Baskerville, 2003; Yin, 2009, Yin, 2012). While the latter generalises from a sample to a broader universe, the former draws theoretical insights from a particular set of results (Yin, 2009).

Thereby, positivists apply a rather nomothetic approach to their research, aiming to find universal law-like facts that can be generalised beyond the investigated case by controlling factors of context and time

(Lincoln & Guba, 1985; Eisenhardt, 1989; Orlikowski & Baroudi, 1991; Lee & Baskerville, 2003; Mingers, 2003; Yin, 2009; Basden, 2011).

Interpretive researchers challenge the nomothetic view. They assume that reality is perceived individually and knowledge is constructed through social interaction (Orlikowski & Baroudi, 1991; Lee & Baskerville, 2003; Stake, 2005). This implies that each individual provides meaning for her or his world. The ideal of discovering law-like insights is inappropriate for interpretive research because theory is always bounded in a particular context and thus demands an idiographic theorising instead (Klein & Myers, 1999; Lee & Baskerville, 2003; Mingers, 2003; Stake, 2005; Basden, 2011). This means understanding the particular case is the main purpose of theorising in interpretive CSR.

It is arguable that these theorising approaches are not contradicting, but rather result in different valid outcomes to theory. Interpretive research generally produces theory that is explanatory in nature. In contrast, positivist research usually aims to develop predictive theory (Gregor, 2006). Not every researcher assigns the term 'theory' to each of these different outcomes. Nevertheless, they all embody an important contribution to theory (Weber, 2012). These propositions of theorising for positivist and interpretive research are neither absolute nor have a deterministic character (Gregor, 2006); rather, they should be understood as tendencies. In any case, the questions of whether and how to use an *a priori* theory play a significant role. Well-formulated theory can be used to derive hypotheses that are subject to testing (Yin, 2009). However, especially for interpretivists, entering the empirical field with specific constructs in mind poses the danger of only seeing what is consistent with the adopted theory and thus constraining the openness to field data (Walsham, 1995a). Apart from conceptualisations as theoretical outcomes, CSR may be used to generate rich descriptions of phenomena (Eisenhardt, 1989; Walsham, 1995a; Darke *et al.*, 1998). In that respect, producing rich empirical data represents a particular strength of CSR. Strong case narratives help the reader to construct a thorough picture of the investigated situation.

### Study Design: Blueprint versus Flexibility

The study design is a plan that specifies the steps taken from the initial research questions towards the answers (Yin, 2009). Hence, at a minimum, it should contain the study's research question(s), available propositions, unit(s) of analysis, the logic linking the data to the propositions and criteria for interpreting the findings (Dubé & Paré, 2003; Paré, 2004; Yin, 2009). The study design can be helpful for the case study researchers, as it can provide guidance for collecting, analysing and interpreting the study's empirical data (Nachmias & Nachmias, 1992). Thereby, it can help to avoid inadvertently not addressing the initial research question(s) (Yin, 2009). At the same time, it sets the boundaries of the study (Dubé & Paré, 2003; Paré, 2004; Piekkari *et al.*, 2009).

Positivists argue that all parts of the design have to be defined before entering the field (Yin, 2009). Additionally, the study design is rather seen as a fixed blueprint. Changes, such as, for example, those concerning the research question(s), should be avoided. If major changes occur, the complete design has to be revised and the study needs to be conducted from the beginning. However, there are also positivists in CSR that take a less extreme position. Eisenhardt (1989), for example, clearly states that research questions and propositions 'are tentative in this kind of research' (p. 536). Moreover, other parts may be altered as long as 'controlled opportunism' (p. 539), rather than an unsystematic process, is applied (Eisenhardt, 1989; Dubé & Paré, 2003).

In contrast, interpretivists see a huge potential in the flexibility of the study design (e.g., Klein & Myers, 1999; Walsham, 2006). In this view, researchers should 'preserve a considerable degree of openness to the field data and a willingness to modify initial assumptions and theories' (Walsham, 2006, p. 76). Thus, these assumptions and theories can be used as an initial guide. However, following them too closely might result in missing potentially exciting and new findings. Under this condition, deliberate redirections improve the study's quality (Piekkari *et al.*, 2009).

### Case Selection: Multiple Cases versus Single Cases

In general, case studies can be categorised as single or multiple case studies, as they pertain to one or several cases, respectively. In the latter, a replication logic should be applied (Eisenhardt, 1989; Paré, 2004; Yin, 2009, Yin, 2012). This can be a literal replication, where the outcome of similar results is expected, or a theoretical replication, where the researchers reasonably presume contrasting results. However, case selection should always aim to maximise insights and knowledge drawn from the study in the available period of time (Paré, 2004; for different sampling strategies compare Patton, 2002).

Positivists prefer multiple case studies (Benbasat *et al.*, 1987; Lee, 1989; Eisenhardt, 1989; Dubé & Paré, 2003; Yin, 2009). Eisenhardt (1989), for instance, recommends '4 to 10 cases' (p. 545) as a guiding advice. Investigating fewer than four cases would lack empirical grounding and fail to facilitate analytical generalisability. However, reaching a given number of cases is not the actual purpose and those numbers should not be taken as a target to be met blindly. In fact, the aim is to reach theoretical saturation, whereby additional knowledge gained through examining new data sources becomes negligible (Glaser & Strauss, 1967). That means, 'researchers should stop adding cases when theoretical saturation is reached' (Eisenhardt, 1989, p. 545). Moreover, there are also situations in which single case studies are appropriate, such as critical cases disconfirming an existing theory, rare or even unique cases, representative cases describing everyday situations, previously inaccessible cases, longitudinal cases or pilot cases (Yin, 2009).

Interpretive researchers try to learn from detailed in-depth observations (Walsham, 1995a). Thus, case studies with a small number of cases and even single case studies are legitimate. Single case studies provide rich, contextual insights into the dynamics of phenomena (Dyer & Wilkins, 1991; Walsham, 1995a; Stake, 2005). These insights allow for seeing the world through different lenses, often providing the reasons behind those different viewpoints at the same time (Klein & Myers, 1999).



### **Multiple Data Sources: Converging Data versus Identifying Diversity**

A case study by definition necessarily comprises multiple data sources (Yin, 2012). However, the intention differentiates positivist from interpretive CSR.

In positivism, different data sources are combined in order to arrive at a converging single explanation (Yin, 2009; Basden, 2011). Thus, researchers avoid misleading data points through data triangulation. Interpretive researchers are 'interested in diversity of perception, even the multiple realities within which people live' (Stake, 2005, p. 454). Consequently, they aim to discover different viewpoints, including conflicting ones, in order to clarify meaning and thus fully understand the researched situation (Mason, 2002). In this context, data triangulation serves to discover diverse meanings held by participants within the investigated case(s) (Piekkari *et al.*, 2009).

Furthermore, positivist and interpretive methodological literature advocates strongly for the use of different data types (e.g., Eisenhardt, 1989; Mingers, 2003; Walsham, 2006), such as qualitative data from interviews and observations, or a combination of qualitative and quantitative data. Nevertheless, we have to assert that quantitative data is more appropriate for positivists' CSR (Basden, 2011).

### **Analytical Approach**

Since no studies comparable to ours exist in the IS field (as former studies focus on one specific philosophical paradigm only (Benbasat *et al.*, 1987; Lee, 1989; Dubé & Paré, 2003)), we analysed literature in other disciplines. Thereby, we found studies investigating CSR in construction engineering and management (Taylor *et al.*, 2011), healthcare (Anthony & Jack, 2009), marketing (Cutler, 2004; Beverland & Lindgreen, 2010; Piekkari *et al.*, 2010; Quintens & Matthyssens, 2010) and international business (Piekkari *et al.*, 2009). In this work, we decided to follow the analytical approach of Piekkari *et al.* (2009) for five reasons. First, the authors did not limit their investigation to a special philosophical paradigm, as did, for instance, Benbasat *et al.* (1987), Lee (1989) and Dubé & Paré (2003) in the IS field. Second, their research question of how case study research has been practiced in international business

corresponds to ours, with the exception of the investigated discipline. Third, they also draw evidence by analysing published case studies (157) in highly reputed and widely circulated journals. Fourth, Piekari *et al.* (2009) describe their approach very precisely, thus allowing for replicability and comparability among studies and disciplines. Finally, international business and information systems research are closely related (Gefen & Straub, 1997; Baskerville & Myers, 2002; Barrett & Scott, 2004).

The analytical approach comprises two steps, namely the categorisation of all published articles in the investigated journals and the qualitative content analysis of the identified case studies. Figure 1 summarises our approach.

**[Insert Figure 1 about here]**

### **Categorisation**

In the first step, we identified all case studies published in six major IS journals over a period of ten years (2001 to 2010). The six journals are those comprising the Senior Scholars' Basket of Six, as adopted by the Association for Information Systems (AIS), namely: European Journal of Information Systems (EJIS), Information Systems Journal (ISJ), Information Systems Research (ISR), Journal of the Association for Information Systems (JAIS), Journal of Management Information Systems (JMIS) and Management Information Systems Quarterly (MISQ). We chose the AIS Basket of Six, since it represents the top-ranking IS journals, as viewed by the AIS and most senior scholars in the IS field (Liu & Myers, 2011) and thus should contain articles reporting on outstanding practice. It further concerns a representative selection, since it comprises different perspectives, research approaches and traditions of the discipline, as well as represents the actual international scope of the field.

To identify the case studies pertinent to this work, we analysed all articles (excluding editorials, forewords, executive overviews, commentaries, opinions and other notes) and categorised them as case

studies, marginal case studies, quantitative, qualitative, mixed method (other than case studies) or nonempirical/nonresearch (see Table 1). We decided to adopt these six categories mainly for consistency reasons to the study of Piekkari *et al.* (2009). Although the results in this step detached from CSR might represent an additional value, our goal was only to identify case studies for our further analysis and not to conduct a global methodological examination outside of CSR. For determining whether a study is a case study, we used the definition of Piekkari *et al.* (2009), which refers to a case study as ‘a research strategy that examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of confronting theory with the empirical world’ (p. 569). The term ‘confronting’, in this context, implies that a case study must in some way be concerned with the relationship between theory and the empirical world, thus aiming to develop new theory or refine or test existing theory (Dubois & Gadde, 2002). In contrast, typical teaching cases do not represent case studies with regard to this definition, as they do not focus on the theory aspect, but rather on pedagogical goals. Furthermore, published articles were categorised as marginal case studies if they were explicitly defined as such by their authors, but were incompatible with the above definition. Articles describing work that was neither a case study nor a marginal case study were specified as quantitative studies if the authors primarily used statistical or numerical data and as qualitative studies if they primarily used textual data. Furthermore, they were categorised as mixed methods studies if methods, in which both quantitative and qualitative data were used intensively, were applied in one and the same study. Finally, the category nonempirical/nonresearch included all studies in which no empirical data was obtained (e.g., conceptual or methodological studies, as well as literature reviews) or which had no clear research purpose (e.g., practitioner-oriented or pedagogical studies).

Naturally, the categorisation was not straightforward in each case. Therefore, we implemented a process that ensured that diverse opinions were explored and finally resolved to provide single classification. Three researchers experienced in conducting and teaching CSR in the IS field were involved in the study.

Every article was first independently categorised by two researchers. If both agreed on a category, they assigned an article to it. Otherwise, they discussed the reasons for their diverse opinions until an agreement could be reached, or consulted the third researcher. Thereby, researchers' roles were constantly changing, as the two researchers conducting the initial categorisation were not always the same. Thus, workload was approximately uniformly distributed across the three researchers. Using this researcher triangulation (Denzin, 1989), we ensured high validity and avoided excluding any case study relevant to our further analysis.

Table 1 shows that, in total, 1583 published articles were analysed. Quantitative research clearly represents the majority, accounting for 590 articles (37%), followed by nonempirical/nonresearch with 395 articles (25%) and case studies with 327 articles (21%).

**[Insert Table 1 about here]**

### **Qualitative Content Analysis**

The second step of our analysis consisted of a comprehensive qualitative content analysis (Ryan & Bernard H. R., 2000) of the 327 case studies identified in step one. This analysis focused on the plain text, whereby the following codes were derived from literature (e.g., Piekkari *et al.*, 2009; Dubé & Paré, 2003): philosophical paradigm, explicit statement of philosophical paradigm, cited methodological literature, purpose of the study, way of theorising, flexibility of research design, unit of analysis, number of cases, rationales for case selection, employed data sources, rationales for data sources and intention of using multiple data sources. During the coding process, these codes were amended, reviewed and refined iteratively. We applied this approach through extensive discussions of new and diverse data interpretation within the researcher team. This represents an established procedure for conducting a qualitative content analysis (Ryan & Bernard H. R., 2000). As Piekkari *et al.* (2009) describe, some of their codes had to be split into more finely-grained subcategories. The same applies to our study. For

example, we broke down the initial code 'Flexibility of research design' into three subcategories: (1) 'Yes': The research design was explicitly described as flexible, or we could identify it as such based on the authors' methodological descriptions, (2) 'No, not explicit': Whether the research design was flexible was not explicitly described and the methodological descriptions let us assume that a fixed design was implemented, and (3) 'No': The research design was explicitly called fixed. If necessary, we reanalysed articles after changing the coding scheme. Parallel to step one, we ensured researcher triangulation by using multiple coders. However, before coding all case studies, we analysed a set of 20 case studies to derive a common approach all researchers would follow. Next, at least two researchers independently coded every case study from the beginning. If both agreed on the codes, those codes were assigned to the respective article. Otherwise, they tried to come to an agreement or consulted the third researcher. As described above, the coding scheme was refined if necessary. Once again, the researchers' roles were changing in order to avoid the same two researchers always performing the initial dual coding and to distribute the workload equally. This researcher triangulation was not only important for cross-checking, but also for developing new and refining existing codes (Golden-Biddle & Locke, 2006). Thus, diverse opinions between coders were often very useful, as they led to more precise codes. The results of the content analysis, which are the direct quotes from the text and our qualitative annotations, were stored in a database specifically designed for this study. Each data set represented an analysed article and the data fields in a data set consisted of the codes. This aggregated view facilitated our qualitative data analysis, as well as allowed frequency counts where reasonable.

### **The Current Case Study Research Practice**

We structured the analysis of the identified case studies according to the five themes introduced above: philosophical foundations, theorising, study design, case selection and data sources. Generally, we found a dualism, consisting of a positivist and an equally strong interpretive research stream, as case studies with different philosophical underpinnings were rarely published. In this section, we contrast the two

prevailing research streams. Moreover, we discuss deviations from mindful CSR and their consequences for the IS CSR community. We also provide representative examples from the analysed case studies. Table 2 summarises our observations.

### **Philosophical Foundations**

Authors of almost all analysed case studies (97%) adopted either positivism or interpretivism. Supporting the claim that interpretivism is no longer an emerging, but by now a fully established, philosophical paradigm within the IS community (Walsham, 2006), we found that the total number of interpretive studies slightly outweighs that of positivist ones.

Only a few studies adopted deviating philosophical paradigms. However, these paradigms relate to the aforementioned ones. In fact, they are for the most part composed of various elements of the positivist and interpretive stances. For instance, Ashurst *et al.* (2008) explain the incorporation of interpretive and positivist elements into their research. Despite the call for paradigmatic pluralism (e.g., Lee, 1991; Mingers, 2003), approaching research accordingly is still an exception within CSR. Therefore, the group of positivist and interpretive studies is considered solely for further analysis.

Although various CSR methodologists advocate that researchers report on their underlying philosophical assumptions (e.g., Walsham, 1995a; Garcia & Quek, 1997), we found that the authors of the majority of the reviewed studies did this only implicitly. In 69% of the cases, the philosophical paradigm adopted by the authors was not specified. It can be difficult to decide on which philosophical paradigm a study is (implicitly) grounded, if the authors provide only scarce information about their research approach. The assertion that authors followed a rather positivist or interpretive paradigm can be justified by examining the different elements of CSR, which were already addressed in the section *Theoretical Background*. Strong indicators for positivism are, for example, the excessive use of quantitative methods (e.g., Bowen *et al.*, 2002) and the development of testable theory (Gregor, 2006).

Many studies referenced CSR methodologists while elaborating on their applied research approach. By adopting a specific philosophical paradigm, researchers accordingly cited certain methodological authorities. In positivist studies, Yin (2009 and former editions), Eisenhardt (1989) and Benbasat *et al.* (1987) were by far the most frequently cited authors. Although Yin (2009) was still generally cited in interpretive studies, Walsham (1995a) and Klein & Myers (1999) emerged as often cited methodological authorities in the interpretive field.

We observed that, in both research streams, the authors report on their underlying philosophical paradigms in a surprisingly low number of cases, indicating a lack of mindfulness. It is thus questionable whether every researcher is aware of different possible philosophical assumptions and their consequences for a research project and thus their importance for the reader. Furthermore, the number of explicit positivist studies (8%) is much lower than the number of interpretivists stating their paradigm explicitly (52%). One plausible explanation for this inconsistency is the pressure on interpretive researchers to provide rationales for deviating from the assumptions of the positivist research tradition. In addition, it is arguable that researchers belonging to the hegemonic campus, which in this case represents the positivist research tradition, feel no need to explain long-established practices, as these have become a norm. However, this approach involves a risk of forming conventions that are flawed as they may be developed through social pressure associated with advisors and colleagues.

Although interpretivists were less reluctant to report on their assumptions, we still perceive the number of such cases insufficient, since we believe that explicitly stating assumptions and philosophical beliefs accomplishes three important contributions. First, it is necessary for the reader to fully comprehend and conceive the decisions made during the study. Unjustified decisions could otherwise appear to the reader as threats to validity and could damage the overall impression of quality. Second, clearly formulating underlying assumptions and beliefs helps researchers to build a credible research foundation that carries the applied methods consistently. Third, this represents a prerequisite for researchers of

different philosophical stances to learn from each other, as it will help to reflect on prior research and enable them to adapt methods in a mindful manner. Thus, a mindful case study researcher should become aware of her or his philosophical assumptions and consequences for the research project and state them explicitly in the paper.

**[Insert Table 2 about here]**

### Theorising

In line with the claim that CSR is particularly appropriate for developing new theory (Eisenhardt, 1989), we found that nearly all authors employed this aspect of theorising in their studies. Interpretivists mainly conducted research focusing solely on developing theory (78%), whereas positivists extended this scope to include testing constructs and hypotheses in a considerable number of cases (29%). Nevertheless, theorising with the aim to test theory was still underrepresented overall (19%). This finding contradicts the notion that CSR is very useful for investigating the extremes of a specific theory and therefore testing its boundaries (Yin, 2009).

Studies further varied in terms of how the authors generalised their results. Positivist researchers used an idiographic way of theorising in about the same number of studies as the nomothetic approach. For instance, researchers only developed implications limited to a local area or a specific domain (e.g., Maldonado, 2010). In spite of theorising in an idiographic, rather than nomothetic manner, these researchers still grounded their studies on positivist assumptions and associated methods for conducting research and establishing credibility. In the case of Mehta & Hirschheim (2007), the authors stressed that the presented results should be seen as tendencies rather than prepositions. Still, this study was grounded on positivist assumptions, since the researchers expected converging results while triangulating data sources. In contrast, studies applying a more nomothetic form of theorising did this by generalising beyond the boundaries of the investigated cases. As an example, in their study, Huang *et al.* (2010) tended to draw their conclusions about information technology governance structures on small



and medium-sized enterprises in general. Other researchers emphasised that they were generalising to a broader theory or concept (e.g., Alavi *et al.*, 2006).

Regarding the interpretive studies, we observed a consistent picture of idiographic theorising. This finding corresponds to the assumption that interpretivists especially favour and argue for theory focusing solely on explanation (Gregor, 2006). Whether this constitutes actual theory or only a contribution to theory remains controversial (Weber, 2012). Researchers emphasised that they were generalising analytically instead of seeking statistical generalisations, which means generalising from empirical statements to theoretical concepts (e.g., Silva & Backhouse, 2003; Schultze & Orlikowski, 2004; Vaast & Walsham, 2009). Intensively studying a particular case was often referred to as a limitation of the study. For instance, Pawlowski & Robey (2004) stated in their study that the reported results are limited to the specific organisational context of the case under investigation – a company with IT professionals and their understanding of their roles as knowledge brokers. Rarely, interpretive authors adopted a nomothetic form of theorising. For instance, Grimsley & Meehan (2007) sought a generic framework for evaluating e-Government services, which could be ‘read as a hypothesis’ (p. 140), by avoiding introducing any elements that were specific to their chosen domain. However, the interpretive approach applied in this study remains in conflict with seeking such a generic framework.

The overall number of case studies used to test theory was lower than expected (see section *Theoretical Background*). However, a greater number of positivists tested their propositions compared to the interpretivists. This finding is expected, as positivist research generally places a rather strong emphasis on prediction and generalisation (Gregor, 2006). Still, we believe that the potential of CSR to test theories is underestimated by researchers in general. CSR is an approach that studies phenomena intensively, in contrast to extensively (Mingers, 2001). This provides an opportunity to gain deep insights into critical cases regarding a specific theory, in contrast to testing theory in a broad way in a vast number of scenarios. Researchers should mindfully exploit this opportunity to investigate theory in its

extremes and test its boundaries, as this will help forge robust theory (Yin, 2009). However, the low number of theory-testing case studies might also be an outcome of the review process. Though vastly accepted by methodological CSR literature, journals and thus reviewers still seem to favour theory-developing case studies over theory-testing ones. Therefore, authors might be discouraged to choose a theory-testing research design from the outset or change an initial theory-testing study to a theory-developing one in the later course of the study – even during the review process. This might lead to research designs that are not fully appropriate for their researched phenomena and prevent researchers from tapping the full potential of their studies.

Regarding the positivists' usage of nomothetic and idiographic approaches in about the same number of studies, we observed a practice inconsistent to methodological literature. Mindful case study researchers should choose a way of theorising that fits their philosophical assumptions. As idiographic approaches usually do not fit positivist assumptions and research goals, it is difficult to understand why some researchers chose to follow a form of theorising with very limited generalisability. Applying the appropriate form of theorising or revising initial research goals may be necessary in these studies.

### Study Design

In almost all analysed case studies, the research design was not flexible or was not reported as such. This holds true for both positivism (99%) and interpretivism (93%). Thus, we identified very few flexible examples.

Concerning positivism, this finding is not surprising, since one of the most cited methodologists refers to the study design as a fixed blueprint (Yin, 2009). One of the outstanding utilisations of flexibility is Lee and Xia's (2010) study of the influence of team autonomy and team diversity on software development agility. The authors neither formulated their research questions nor developed their measurement instruments until analysing the first field data. Besides those very few examples of considerable flexibility found during our analysis, design changes in positivism are often marginal. Notable examples are Lamb &

King (2003), who revised their sampling approach after several interviews, and Smolander *et al.* (2008), who extended the data collection according to their emerging needs.

Concerning interpretivism, our findings are unexpected, since the methodological literature explicitly underlines the huge potential of the study design's flexibility (e.g., Klein & Myers, 1999; Walsham, 2006). There are some favourable examples, which vary in scope and the type of changes applied to the initial research design. For instance, in their study of how users react to the regulatory features of software, Mlcakova & Whitley (2004) claimed their entire research process to be 'circular and reflexive' (p. 98) and highlighted the benefit of continuously reflecting each research step. The authors further stated that 'in this research, the research question and questions in the topic guide were reformulated after every interview, as problems or new ideas appeared' (p. 98). Levina & Vaast (2006), Topi *et al.* (2006), Schultze & Orlikowski (2004) and Ren *et al.* (2008) also made changes to the research questions. Ren *et al.* (2008) added further data sources during their five-month data collection period and gathered data from different perspectives. Finally, in a study conducted by Miscione (2007), who investigated the interplay between telemedicine and local healthcare practices in the upper Amazonas, we saw an example of casing. In this process, cases are found and iteratively defined during the research process (Ragin, 1992). According to Miscione, 'As anticipated in the theoretical section, the organizational field (the frame of reference for a specific activity) cannot be defined a priori. During the process of this research, it emerged that the organizational field constructed by telemedicine comprised herbal, scientific, and spiritual-magical practices.' (Miscione, 2007, p. 410).

In only 32% of the positivist and 26% of the interpretive case studies, the unit of analysis was clearly stated. This is insufficient, as clearly stating the unit of analysis is necessary to set the boundaries of the study. It is important for the researchers during their fieldwork as well as the readers trying to follow it. This holds true for both philosophical paradigms. However, our results show a slight improvement over time in this respect. In particular, we saw a general upward trend within the interpretive stance. An

outstanding example is Boonstra (2003), who not only clearly defined the unit of analysis in his explorative study of the structure and analysis of IS decision-making processes, but also provided rationales for his choice. A study conducted by Ash & Burn (2003) is another proper example of clearly stating the unit of analysis. As the authors adopted an embedded multiple case study approach, they also used multiple units of analysis to assess the benefits from e-business transformation through effective enterprise management, namely (1) the company, (2) the project team and (3) the project. Additionally, choosing more than one unit of analysis represents a very innovative approach, as only a few studies within our analysis adopted it.

Concerning the small number of flexible research designs in the positivist stance, it is questionable whether it really stems from the fact that the studies were not flexible or whether authors chose not to report them as such due to the fear of losing methodological rigour. Nevertheless, seeing the enormous potential of flexibility in some analysed studies (e.g., identifying new and valuable research questions, or being able to react opportunistically to other unforeseeable developments), it is questionable why more authors do not follow Eisenhardt's (1989) view, for instance, and adopt a more flexible approach in their studies. If applied, researchers need to report this clearly in order to raise other researchers' awareness of its advantages and to serve as useful example. The fact that the initial research design is changed should thus not be judged as a weakness by reviewers. Instead, the mindful adoption should be honoured. Researchers will miss opportunities if they blindly follow their initial study design. In addition, interpretivists should be more anxious to mindfully utilise flexibility and to report it accordingly, since no compulsion exists in the interpretive methodology.

The paucity of publications in which the authors clearly stated their unit of analysis is especially disappointing, since this issue is broadly discussed in former studies analysing CSR practice in our discipline (Benbasat *et al.*, 1987; Dubé & Paré, 2003). Noting no improvements over the last decade, Dubé & Paré (2003) re-iterated the need for the authors to clearly specify the unit of analysis and

pointed out its importance for CSR. The identified general upward trend within the interpretive stance is surprising, given that mainly positivist methodologists called for clearer reporting. However, we think that the number of case study researchers clearly stating the unit of analysis in both stances is still too small, as failing to do so leaves the study boundaries undefined. Clear boundaries are important for the researchers during all stages of the case study (e.g., for setting priorities during data collection) and the readers for traceability reasons and understanding the scope of the results.

### Case Selection

Overall, within the reviewed sample, single case studies (58%) slightly dominated multiple case studies (42%). At the first sight, one reason for this finding might be the emergence of interpretivism over the last decade (Walsham, 2006). However, taking a closer look, this explanation appears overly superficial.

With respect to positivism, 44% of the analysed case studies were single case studies, whereas 56% comprised a multiple case approach. This slight preference for multiple case studies shows that, although there is ample positivist methodological literature advocating multiple case studies (see section *Theoretical Background*), the connection between the number of cases and epistemological assumptions is rather weak. However, it is of great importance that rationales for choosing either a single or multiple case design exist (see section *Theoretical Background*). Only then is case selection mindful. Thus, it is criticisable that only 13% of the authors conducting single case studies provided rationales for choosing the single case approach. If authors do not specify rationales, readers cannot be expected to understand the meaning of a single case study in the respective situation. Nevertheless, proper examples are Sarker & Lee (2001) and Chiasson & Green (2007), who refer to their single cases as critical cases. Moreover, Levina & Ross (2003) had the rare opportunity for broad access to a successful outsourcing engagement and thus called their case a revelatory one. Concerning the number of cases comprising the multiple case studies, we also identified a divergence from Eisenhardt's (1989) guiding advice of four to ten cases. Only 38% of the reviewed case studies followed this recommendation, while 44% investigated less than four

(i.e., two or three) and 18% more than ten cases. However, we want to stress again that the exact number of cases is not important as long as theoretical saturation is reached. It is the data's richness and not the number of investigated cases that yields valuable results. Examples of studies comprising a high number of cases are those of Levy *et al.* (2003, 37 cases), Xue *et al.* (2008, 58 cases) and Ryan & Valverde (2006, 92 cases). Similar to single case studies, the fact that the minority of authors (25%) provided rationales for conducting such a study is criticisable. Additionally, fewer than half of the authors of positivist studies gave rationales as to why they chose their specific cases in multiple case studies. One example for a well explained case selection is Sia & Soh's study (2007). The authors clearly described how they applied theoretical as well as literal replication within their study of package-organisation misalignment in three Singapore organisations.

Concerning interpretivism, 72% of the analysed case studies were single case studies. This corresponds to the methodological literature, which recommends a clear preference towards rich contextual insights from single case studies (Walsham, 1995a). Regarding the number of cases within the multiple case studies, we observed mainly a small number of cases, as 73% of the multiple cases studies investigated two or three cases. The overall maximum number of cases within an interpretive study was 39 (Lesca & Caron-Fasan, 2008). Other large-N examples are Lynch & Gregor (2004, 38 cases) and Currie & Seltsikas (2001, 28 cases). It is, however, questionable whether such high numbers of cases allow for deriving deep insights from each case, as intended by interpretive studies. In line with the observations pertaining to positivism, it is noticeable that only a minority of authors provide rationales why one or more cases are investigated (15%). Finally, less than a third of the authors of interpretive studies gave rationales for choosing their specific cases. Certainly, it would be helpful to be informed about the selection process in many more studies in order to fully comprehend the authors' purposes and expectations concerning the selected cases. One example is Doherty *et al.* (2006), who described in

detail why UK's National Health Service provides an adequate context for investigating the relationship between technology and the organisation.

In conclusion, in our view, the number of cases and the epistemological assumptions in the reviewed studies are connected weakly. It would neither be mindful for positivist researchers to apply only multiple case studies nor for interpretivists to restrict themselves to single case studies. Multiple case studies can be used to reach theoretical saturation if a single case is not sufficient. Similarly, single case studies can be used, if rich, contextual insights into the dynamics of phenomena are favourable. Both arguments hold true independent from the underlying philosophical assumptions.

### Multiple Data Sources

Our study confirms previous findings concerning the role of interviews as a predominant data source (Dubé & Paré, 2003). Besides interviews (88% of all case studies), we observed a variety of data sources used in the analysed case studies, dominated by documents (60%) and observational data (47%). Thereby, an overwhelming majority (86%) used more than one data source type. Compared to Dubé & Paré (2003), this is a positive development, as the use of a variety of data sources is demanded by the methodological CSR literature (see section *Theoretical Background*). However, the authors of the analysed case studies rarely discussed the choice of data sources and attendant limitations.

Comparing positivist and interpretive case studies yields mainly the same finding concerning the variety of data sources. In addition to the data sources mentioned above, positivist case researchers often used quantitative data (32%), such as those derived from surveys. Examples of case studies that draw heavily on quantitative survey data are Sussman & Siegal (2003) and Leimeister *et al.* (2005). Nevertheless, interviews were the predominant data source, with 85% of positivist case studies using this data source type, followed by documents (55%) and observations (34%). As expected (see section *Theoretical Background*), authors of most of the positivist case studies relied on multiple data sources in order to arrive at a converging single explanation. For instance, Shaft *et al.* (2008) used interviews, emails and

surveys to 'better ascertain if findings are an artefact of the method rather than descriptive of the phenomena' (p. 284). Similar approaches, referring to Yin's (2009) construct validity, were taken by Lam (2005), Wagner & Majchrzak (2006) and Wamba & Chatfield (2009), for example.

In contrast to positivism, quantitative data played a less important role in the analysed interpretive case studies, with only 15% of authors using this type of data. Instead, observational data was used much more often (60%). Comparable to positivism, the dominant sources were interviews (91%), followed by documents (65%). As described in the extant methodological literature, most interpretive case studies used different data source types for developing a multi-faceted understanding of the phenomena under investigation. For example, Newman & Zhao (2008) selected interviewees 'from different levels' (p. 413) to discover different meanings. Thereby, they used a mirroring technique recommended by Myers & Newman (2007) to elicit the participants' stories, related in their own words. Additionally, the authors made extensive use of internal documentation. An additional example of the combination of a variety of data sources is a study conducted by Olsson *et al.* (2008), who collected a multitude of data over a 20-month period.

However, our review revealed articles that did not follow the methodological guidance concerning multiple data sources. On the one hand, some positivist researchers surprisingly attempted to discover personal perceptions from almost every participant within their study, supplementing the collected information by additional data from observations and documents (e.g., Ibbott & O'Keefe, 2004). The goal seemed to be uncovering and explaining the diversity of different meanings. On the other hand, there were also interpretive studies aiming to find data 'to converge in various ways, assuring validity of findings' (Kern & Willcocks, 2002, p. 7). As shown above, this is not a typical characteristic of interpretive CSR. Additionally, we noted only a small portion of case studies using qualitative and quantitative data (22%). This is surprising, as the combination of quantitative and qualitative data is regarded as 'mutually informing' (Mingers, 2003, p. 236). Mindful CSR should take the beneficial potential of combining



qualitative and quantitative data into account. We assume that case study researchers are not yet fully aware of this opportunity. Furthermore, mindful case study researchers should select data sources according to their epistemological intentions (i.e., reaching convergence or uncovering different meanings).

## Conclusion

In this study, we examined the CSR practice in the IS community by analysing all 327 case studies published in six leading journals from the Senior Scholars' Basket over the past ten years. Based on our analysis, we initiate a debate on the use of CSR and argue for a more mindful application of CSR in IS.

## Doing Mindful Case Study Research

This call is directed to both major research streams, the positivist and the interpretive CSR practice. We observed a dualism of positivism and interpretivism in the analysed articles, with each paradigm underlying about one-half of the analysed case studies. Earlier studies (e.g., Dubé & Paré, 2003) point toward the dominance of the positivist paradigm in the IS CSR practice. We welcome this dualism, as it allows researchers to design and conduct case studies in a way that seems appealing to their own philosophical assumptions and beliefs as well as to the researched phenomena's characteristics. Approaches deviating from positivism and interpretivism still tended to be sidelined during the last decade.

As our critical analysis identified a number of shortcomings in the CSR practice, we argue for more mindfulness concerning the design and conduct of such studies in both research streams. As defined in the *Introduction*, mindful CSR means that researchers do not blindly follow blueprints given in previously published case studies but carefully revise different possible design alternatives. All design decisions should be made consciously with regard to the specific research situation. Case study researchers should be open to, and sometimes try, new approaches in order to capture the most of this research strategy's potential. Therefore, researchers should trace methodological literature as well as state of the art

research practice to critically examine whether it is meaningful to adopt new approaches in their own research. By doing this, the specific research context has to be taken into account.

Why is the use of CSR currently not mindful enough? Regarding the positivist research stream, we argued that researchers belonging to the hegemonic campus do not feel the need to explain long-established practices, as these have become a norm. For example, stating the philosophical assumptions is rather an exception for positivist case studies (see section *The Current Case Study Research Practice*). We observed that disciplinary conventions seem to be established, although they are flawed to some extent. Researchers seem to follow traditions without mindfully considering deviations from these, which sometimes results in research designs that are not fully appropriate to their researched phenomena, yielding results that are not comprehensible or in some cases potentially wrong. Therefore, we encourage positivist case researchers to choose research designs that fit their research context, even if they deviate from the published research tradition. Of course, to be successful, the design decisions should be explained in the paper. This is necessary for the reader to comprehend and conceive decisions made in a study, as this promotes trust in the research results. Regarding the interpretive research stream, we recognise the risk that it may also tend to develop flawed disciplinary conventions, as it becomes more established. We believe that the potential of interpretive CSR is not yet fully uncovered. For instance, although flexible research designs are an exception, they should be recognised as potentially leading to new and unexpected insights into researched phenomena. Therefore, we encourage interpretive researchers to think about the variety of design options when conducting an interpretive case study.

To improve the use of CSR, we furthermore propose the following additional recommendations based on our observations (see section *The Current Case Study Research Practice*):

- CSR for theory testing: CSR aiming to test theory is currently underrepresented. Since methodologists argue for the use of CSR for this purpose, especially from the positivists'

viewpoint (e.g., Yin, 2009), we recommend taking this strategy more frequently into consideration for future research projects. As discussed earlier in this paper, the low number of theory-testing case studies might also be an outcome of the review process, potentially leading to research designs that are not fully appropriate for their researched phenomena. Thus, we encourage researchers to mindfully advocate for their original (theory-testing) research approach and reviewers to be more open to theory-testing case studies and likewise consider them for publication. Only then the full potential of theory-testing case studies can be tapped.

- Purposeful case selection: A minority of case studies provides rationales for the number of cases analysed and the specific cases chosen. It would be helpful to be informed about the selection process in order to fully understand the researchers' intentions and to raise awareness about the limitations concerning the generalisability of the study findings. In particular, authors conducting single case studies should consequently explain why they chose the specific case and why they think that it provides enough insights to answer the study's research question. Authors utilising multiple case studies, in turn, need to point out the underlying design logic (e.g., literal and theoretical replication) and how they seek to reach theoretical saturation.
- Non-interview and quantitative data: Currently, most case studies rely strongly on interview data as their primary data source (see section *The Current Case Study Research Practice*). We recommend that researchers think about research designs that do not utilise interview data as a primary data source, as other data source types, such as real-time observations or archival data, should be equally important. Additionally, we want to emphasise the potential benefits of utilising quantitative data, as cited in the methodological literature (e.g., Mingers, 2003). A combination of qualitative and quantitative data is capable of providing more insight into the case than qualitative data alone, since both data types are mutually informing. Additionally, case study researchers might also consider mixed method approaches (i.e., combining not only

qualitative and quantitative data but qualitative and quantitative research techniques, methods, approaches, concepts or language (Johnson & Onwuegbuzie, 2004)) within their case studies.

## Implications

Based on our findings and recommendations, we derive several implications for the CSR research practice in IS.

- We believe that mindful application of our presented recommendations will help to further improve research outcomes resulting from CSR, as they will be derived by applying appropriate research designs.
- Research outcomes do not solely comprise findings and insights, but also the general comprehensibility needed to replicate and confirm the results by other researchers. Readers gain a higher degree of understanding if researchers take this into account when reporting their study. A number of analysed case studies would not serve as a useful pattern from which learning can take place, as assumptions were not explicitly stated and decisions were unjustified.
- Existing methodological literature could be revised in the light of our findings. New and innovative approaches could be adopted and identified shortcomings stressed more emphatically. This would also be in accordance with the call that research practice should not only learn from methodology, but also the other way round (Alavi & Carlson, 1992).
- We encourage reviewers to be mindful when evaluating a case study. This means that new and innovative articles and study designs, even if they deviate from established conventions, should also be considered for publication if they are well-reasoned.

We believe that debating CSR approaches in use will lead our community to further improvements. Thus, we hope that many researchers will join this debate to enrich it with their experiences and opinions.

## Limitations and Future Research

In closing, we note a number of limitations to our study that may provide potential areas for future research.

As this study aims to provide an overview of how CSR has been practiced in the IS discipline over the past decade, not every characteristic covered in the extant methodological literature could be analysed and discussed within this paper. That is, we focused on broader themes equally relevant to positivist and interpretive case studies. Thus, a consistent extension of this study's scope would be to investigate case studies of each paradigm in more detail, by, for example, evaluating a greater number of characteristics. As already mentioned in the introduction section, Dubé and Paré (2003), for instance, applied this approach to positivist case studies published between 1990 and 1999.

CSR practice in the IS discipline could also be analysed focusing on a comparison of the different scientific journals or communities. Such an evaluation is quite popular in articles investigating research strategies (Mingers, 2003; Chen & Hirschheim, 2004; Liu & Myers, 2011). Based on the results, scholars could identify where specific types of CSR have been most successfully published and thus find the best outlets for their studies.

The aim of this study is to provide a comprehensive overview of how CSR has been practiced in the IS discipline as a whole. Future research could aim to investigate chronicle developments in the use of CSR in IS, leading to an overview and giving a sense of how CSR changed over the years.

We base our findings on the evaluation of six journals. Although we choose the Senior Scholars' Basket of Six, which is assumed to comprise a high relevance and representativeness for IS research in general, the restriction to a specific set of journals constitutes – as with every comprehensive literature review – a limitation to our study. Thus, additional journals could be analysed to derive a more complete picture of the discipline as a whole. As stated in the section *The Current Case Study Research Practice*, we

observed that a dominating number of case studies were either positivist or interpretive in nature. However, we acknowledge that this might not pertain to the articles published in other journals and may reveal the importance of paradigms apart from positivism and interpretivism. In addition, case studies using other paradigms might increasingly emerge in the future and bring along associated methodological recommendations and revolutionary approaches. This emergence should be assessed from time to time.

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**Table 1 Results of article categorisation**

<b>Total number of articles</b>	<b>1583</b>
Quantitative studies	590
Qualitative studies	120
Mixed method studies	108
<b>Case studies</b>	<b>327</b>
Marginal cases	43
Nonempirical/Nonresearch studies	395
<b>% of empirical articles using case studies</b>	<b>27.5</b>
<b>% of all articles using case studies</b>	<b>20.7</b>

**Table 2 Summary of the current CSR practice in IS**

<b>Themes</b>	<b>Positivism</b>	<b>Interpretivism</b>
<b>Philosophical Foundations</b>	Very rare reporting of underlying philosophical assumptions	About half of the studies report underlying philosophical assumptions
	Dominant methodological authorities are Yin, Eisenhardt and Benbasat	Dominant methodological authorities are Yin, Walsham and Klein & Myers
<b>Theorising</b>	Mainly theory development, but also theory testing	Mainly theory development
	About the same amount of nomothetic and idiographic theorising	Mainly idiographic theorising
<b>Study Design</b>	Almost no flexible research design	Almost no flexible research design
	Only a few authors state their unit of analysis	Only a few authors state their unit of analysis
<b>Case Selection</b>	Only a slight preference for multiple case studies	Mainly single case studies
	Multiple case studies often diverge from Eisenhardt's (1989) guiding advice of four to ten cases	Multiple case studies, mainly comprising small number of cases
	Only a few authors provide rationales for selecting the number of cases or choosing the specific cases	Only a few authors provide rationales for selecting the number of cases or choosing the specific cases
<b>Multiple Data Sources</b>	Variety of data sources used to arrive at a converging single explanation	Variety of data sources used for developing a multi-faceted understanding of the phenomena under investigation
	Quantitative data used much more often than in other paradigms	Quantitative data played a subsidiary role
	Interviews predominant data source, followed by documents and observations	Interviews predominant data source, followed by documents and observations
		Observations used much more often than in other paradigms
	Studies not relying on interview data are very rare	Studies not relying on interview data are very rare

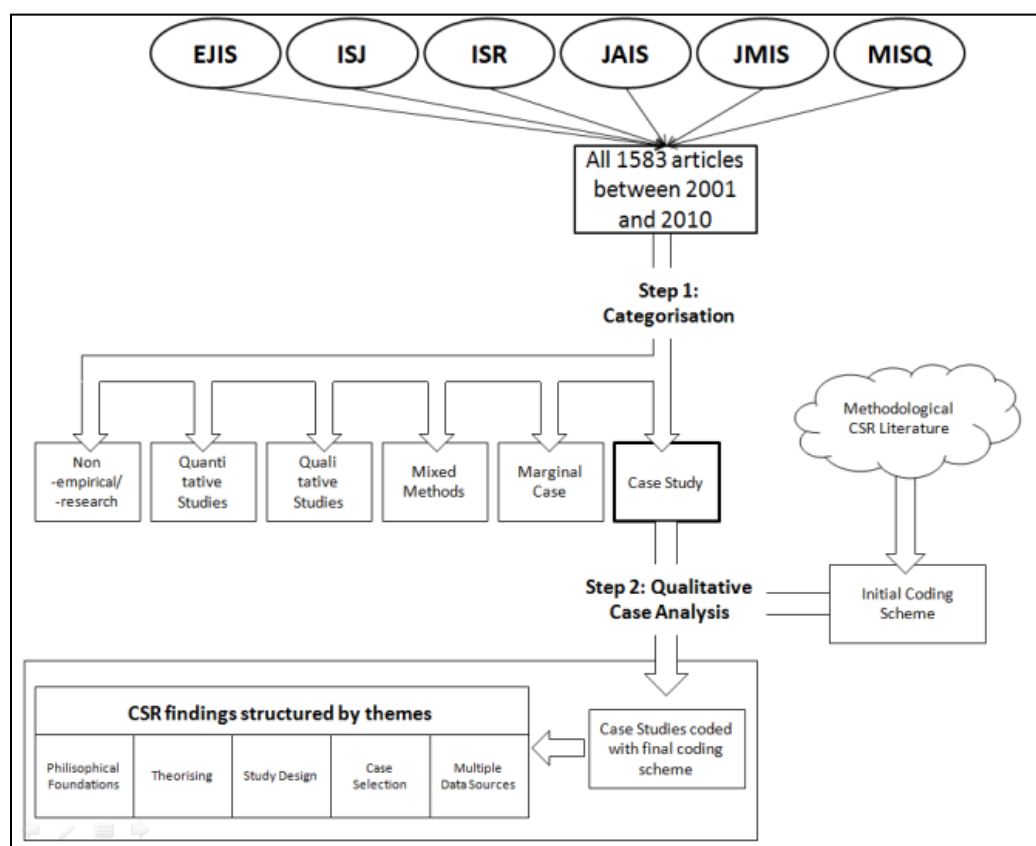


Figure 1 Overview of the analytical approach

## Appendix A: Results of article categorisation

Table A1 Detailed results of article categorisation

Journal	Year	Quant. study	Qual. study	Mixed method	Case study	Marginal case	Non-empirical	Cases % of emp.	Cases % of total	Articles per vol.
EJIS	2001	2	2	0	7	1	6	58.4	38.9	18
EJIS	2002	6	1	2	8	1	3	44.5	38.1	21
EJIS	2003	8	0	1	7	2	2	38.9	35.0	20
EJIS	2004	1	3	2	9	0	7	60.0	41.0	22
EJIS	2005	5	1	0	18	2	3	69.3	62.1	29
EJIS	2006	10	1	2	23	2	9	60.6	49.0	47
EJIS	2007	17	4	5	16	5	7	34.1	29.7	54
EJIS	2008	11	5	1	13	0	9	43.4	33.4	39
EJIS	2009	13	3	3	16	0	4	45.8	41.1	39
EJIS	2010	16	3	2	14	0	3	40.0	36.9	38

<b>Total</b>		<b>89</b>	<b>23</b>	<b>18</b>	<b>131</b>	<b>13</b>	<b>53</b>	<b>47.9</b>	<b>40.1</b>	<b>327</b>
ISJ	2001	3	1	0	4	0	7	50.0	26.7	15
ISJ	2002	5	0	0	5	2	3	41.7	33.4	15
ISJ	2003	2	3	0	7	1	4	53.9	41.2	17
ISJ	2004	4	2	0	5	2	4	38.5	29.5	17
ISJ	2005	5	2	0	6	1	2	42.9	37.5	16
ISJ	2006	3	1	1	7	0	1	58.4	53.9	13
ISJ	2007	1	2	1	9	0	5	69.3	50.0	18
ISJ	2008	4	3	1	13	2	3	56.6	50.0	26
ISJ	2009	6	10	0	5	0	2	23.9	21.8	23
ISJ	2010	5	3	1	9	0	3	50.0	42.9	21
<b>Total</b>		<b>38</b>	<b>27</b>	<b>4</b>	<b>70</b>	<b>8</b>	<b>34</b>	<b>47.7</b>	<b>38.7</b>	<b>181</b>
ISR	2001	6	1	3	0	0	9	0.0	0.0	19
ISR	2002	12	0	3	0	0	8	0.0	0.0	23
ISR	2003	5	3	0	3	0	5	27.3	18.8	16
ISR	2004	9	0	1	3	1	6	21.5	15.0	20
ISR	2005	10	0	2	1	0	8	7.7	4.8	21
ISR	2006	8	3	6	1	0	4	5.6	4.6	22
ISR	2007	10	1	3	1	1	5	6.3	4.8	21
ISR	2008	16	2	4	1	0	2	4.4	4.0	25
ISR	2009	13	0	6	4	0	5	17.4	14.3	28
ISR	2010	18	4	2	1	0	12	4.0	2.8	37
<b>Total</b>		<b>107</b>	<b>14</b>	<b>30</b>	<b>15</b>	<b>2</b>	<b>64</b>	<b>9.0</b>	<b>6.5</b>	<b>232</b>
J AIS	2001	5	0	1	1	1	0	12.5	12.5	8
J AIS	2002	3	1	1	0	0	2	0.0	0.0	7
J AIS	2003	6	1	0	2	1	1	20.0	18.2	11
J AIS	2004	4	1	0	1	0	11	16.7	5.9	17
J AIS	2005	5	2	0	0	0	6	0.0	0.0	13
J AIS	2006	9	7	0	1	2	6	5.3	4.0	25
J AIS	2007	6	2	0	6	0	13	42.9	22.3	27
J AIS	2008	9	5	3	3	1	7	14.3	10.8	28
J AIS	2009	7	4	1	5	2	13	26.4	15.7	32
J AIS	2010	12	3	3	6	2	5	23.1	19.4	31
<b>Total</b>		<b>66</b>	<b>26</b>	<b>9</b>	<b>25</b>	<b>9</b>	<b>64</b>	<b>18.6</b>	<b>12.6</b>	<b>199</b>
J MIS	2001	17	3	2	1	0	13	4.4	2.8	36
J MIS	2002	16	3	4	2	1	10	7.7	5.6	36
J MIS	2003	8	2	3	5	3	13	23.9	14.8	34
J MIS	2004	12	4	3	1	2	13	4.6	2.9	35
J MIS	2005	21	0	7	4	0	10	12.5	9.6	42
J MIS	2006	24	3	1	7	0	6	20.0	17.1	41
J MIS	2007	18	2	2	5	0	13	18.6	12.5	40
J MIS	2008	16	2	3	4	1	15	15.4	9.8	41
J MIS	2009	15	3	1	4	0	14	17.4	10.9	37
J MIS	2010	17	3	8	2	0	10	6.7	5.0	40

<b>Total</b>		<b>164</b>	<b>25</b>	<b>34</b>	<b>35</b>	<b>7</b>	<b>117</b>	<b>13.3</b>	<b>9.2</b>	<b>382</b>
MISQ	2001	7	0	2	2	0	5	18.2	12.5	16
MISQ	2002	6	0	0	3	1	5	30.0	20.0	15
MISQ	2003	8	0	2	4	0	5	28.6	21.1	19
MISQ	2004	6	0	1	7	2	5	43.8	33.4	21
MISQ	2005	14	0	0	4	0	8	22.3	15.4	26
MISQ	2006	23	0	2	9	0	4	26.5	23.7	38
MISQ	2007	12	2	1	8	0	7	34.8	26.7	30
MISQ	2008	14	1	1	9	1	6	34.7	28.2	32
MISQ	2009	17	0	2	1	0	13	5.0	3.1	33
MISQ	2010	19	2	2	4	0	5	14.9	12.5	32
<b>Total</b>		<b>126</b>	<b>5</b>	<b>13</b>	<b>51</b>	<b>4</b>	<b>63</b>	<b>25.7</b>	<b>19.5</b>	<b>262</b>
<b>Grand total</b>		<b>590</b>	<b>120</b>	<b>108</b>	<b>327</b>	<b>43</b>	<b>395</b>	<b>27.6</b>	<b>20.7</b>	<b>1583</b>