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INTERPRETIVE CASE STUDY RESEARCH: EXPERIENCES AND RECOMMENDATIONS

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Abstract

Conducting a case study implies many practical challenges which are often unexpected beforehand. We believe that it helps especially less-experienced researchers to be aware of such challenges before starting a case study research project.

This article contributes to methodological literature on case study research (CSR) as we give recommendations concerning practical challenges in interpretive CSR. These challenges are not yet sufficiently covered in literature.

We briefly discuss methodological literature on CSR and describe the research gap our paper addresses. We derive recommendations from our experiences with an interpretive case study. Thus, we explain the research design of our case study to allow understanding the context from which we derive our recommendations.

We provide 15 recommendations of how to conduct interpretive CSR in IS. These recommendations are threefold and cover the following parts of a case study: (1) initiation, (2) data collection and (3) data analysis. In order to explain our recommendations we use anecdotal evidence from our case study.

This paper mainly addresses less-experienced IS researchers who can use our recommendations as guidelines for their own case studies. Given the fact that our recommendations are derived from a specific context, they should not be seen as prescriptive, but instead as descriptive issues for consideration. However, we believe that even experienced IS researchers and researchers from other research areas will make use of this article as they can reflect on their own approaches.

Keywords: case study, case study research, qualitative research, interpretive research, interpretivism.

1 INTRODUCTION

There has been an increasing number of interpretive studies in leading information system (IS) journals (Mingers 2003). Among these are a lot of studies applying the case study research (CSR) methodology. Thereby, scholars alternatively use the terms “method”, “methodology”, and “research strategy”. Rather than continuing this debate, we follow Piekkari et al. (2010) and call CSR a methodology. In this paper, we aim to contribute to methodological literature on interpretive CSR as we present recommendations concerning practical issues of how to conduct interpretive single case CSR in the field of IS. We base these recommendations on our experiences with such a case study.

It is important to mention that we do not compare the use of interpretive research with other philosophical foundations. Our aim is to support researchers who decide to conduct an interpretive case study. Furthermore, we do not describe how to develop an adequate research design but how to practically apply a given research design.

A variety of researchers deals with methodological aspects of conducting CSR. These aspects include discussions about the research design by giving suggestions about how to choose a unit of analysis, how to decide between conducting a multiple or a single case study, how to select case sites regarding literal or theoretical replication, and how to choose between data collection methods (e.g., Benbasat, Goldstein and Mead 1987, Runeson and Höst 2009, Yin 2009). Additionally, the literature focuses on frequently applied data collection methods, such as interviews (e.g., Kvale and Brinkmann 2009, Myers and Newman 2007), as well as the character of qualitative research in general (e.g., Flick 2009, Myers and Avison 2002b) and in an interpretive stance (e.g., Denzin and Lincoln 2011, Mason 2002, Walsham 2006). Some articles include advices for applying the CSR methodology from a positivistic point of view (e.g., Lee 1989)

Our article focuses on practical recommendations how to conduct interpretive single case CSR. We derive these recommendations from our experiences in conducting such a case study. Our article is not the first attempt to give practical recommendations. Darke et al. (1998) discuss practical challenges of applying CSR but these are quite generic as they cover CSR in general.

We enhance literature by narrowly focusing on a certain kind of CSR. Conducting a single case study poses different challenges than a multiple case study. The same applies to interpretive research compared to other philosophical stances. General methods for conducting and evaluating interpretive case studies can for example be found in Klein and Myers (1999). Walsham explicitly addresses the nature of interpretive IS CSR (Walsham 1995) as well as interpretive research in general (Walsham 2006). We add to this work, as we report more detailed experiences in carrying out such fieldwork. We describe concrete challenges we faced and how to overcome these. Thus, our primary target audience are less-experienced IS researchers who might use our recommendations as guidelines for their own interpretive case studies. Nevertheless, we hope that also experienced IS researchers will make use of this article as they may reflect their own approaches.

The remainder of this paper is organized as follows. In the subsequent section, we explain the research design underlying our example case study. Then, we proceed to describe the experiences in conducting our in-depth interpretive case study. The essential results of that section are recommendations of how to conduct interpretive CSR in IS. In the last section we discuss conclusions and limitations of our recommendations.

2 OUR CASE STUDY’S RESEARCH DESIGN

The main focus of this article is to provide recommendations for conducting interpretive CSR in IS. As we derive these recommendations from our own experiences with such a case study, it is important to describe the underlying research design. This enables the understanding of the anecdotes in section 3. We describe our research design with regard to the following criteria: (1) research questions, (2)

philosophical foundations, (3) theorizing, (4) case selection, (5) data sources (Piekkari, Welch and Paavilainen 2009) and (6) the researcher's involvement (Walsham 2006).

2.1 Research Questions

As we focus on recommendations how to conduct interpretive CSR, we do not provide the answers to our case study's research questions (RQ) in this article. Nevertheless, it is important to understand these RQs as our case study's research design and the resulting experiences and recommendations (cf. section 3) are based on these.

IS scholars have proposed a variety of requirements engineering techniques. These techniques' suitability and effectiveness depend on the contexts they are applied in (Cheng and Atlee 2007, Mathiassen et al. 2007). Accordingly, current RE research should try to understand the problems that RE practitioners face in choosing and applying RE techniques in order to solve requirements risks. Requirements risks potentially lead to wrong or inadequate software solutions, rework, implementation challenges or delay (Barki, Rivard and Talbot 2001, Lyytinen, Mathiassen and Ropponen 1996, Mathiassen et al. 2007). Therefore, the following research questions should be answered:

- RQ1: *How can different situations of requirements risks be characterized in practice?*
- RQ2: *How do practitioners cope with these situations regarding the use of RE techniques?*
- RQ3: *How successful are the applied techniques in coping with these situations?*

By answering these questions, we finally will develop a first answer to RQ4: *Which RE techniques should be applied in different situations of requirements risks?*

To develop answers for these research questions, we apply CSR as an adequate methodology. Scholars recommend applying CSR at exploratory studies (Eisenhardt 1989). Additionally and according to Yin (2009), CSR is suitable to answer research questions of 'how'. Finally, we follow Mathiassen et al.'s (2007, p. 538) call for "case studies of the relationship between practices and techniques, of how and why techniques are adopted and combined, and of the effects that techniques have on resolving risks". CSR allows gaining rich, contextual insights into the dynamics of phenomena under investigation (Dyer and Wilkins 1991), in our case the RE practice in coping with requirements risks.

2.2 Philosophical Foundations

Different philosophical foundations lead to different judgments about the role of CSR, its application, and the criteria for evaluating its quality. Therefore, researchers should clearly state the philosophical approach they follow (Garcia and Quek 1997, Walsham 1995, Piekkari, Welch and Paavilainen 2009).

We position ourselves as interpretive researchers. Interpretivism relies on the assumption that people create and associate their own subjective and intersubjective meanings as they interact with the surrounding world (Dyer and Wilkins 1991, Orlikowski and Baroudi 1991, Walsham 1995, Walsham 2006). Consequently, interpretive researchers understand the world under investigation and themselves as not separable. Thus, they attempt to understand phenomena by accessing the meanings that participants assign to these. They are aware that their data gathered are their own constructions of other people's constructions of their perceptions of the world. As we will show in the subsequent sections, the interpretive approach has an impact on all other elements of the research design.

2.3 Theorizing

Following Ragin (1997), we decided to use case-oriented theorizing. The value of case-oriented approaches is their ability to produce holistic and particularized causal explanations for the outcomes of each investigated case (Piekkari, Welch and Paavilainen 2009). In this case, theorizing means "tracing the causal processes that generate outcomes in specific contexts." (Piekkari, Welch and Paavilainen 2009, p. 571) Especially the context of a phenomenon under investigation is thus regarded to be very important to derive meaningful explanations. The generalization takes place within a single

setting instead of generalizing a theory across different settings (Geertz 1973, Lee and Baskerville 2003).

2.4 Case Selection

We selected a single IS development project (ISDP) which we analyze in detail in order to explain its dynamics. Before we started to search for an ISDP, we established several prerequisites: (1) The requirements for the system to-be-developed should not yet be elicited. This is necessary to become aware of the analysts' perceptions of requirements risks. Otherwise it would not be possible to adequately answer RQ1. (2) Potential RE techniques should not be excluded because of the geographic distance between customer and contractor. Excluding potential techniques because of this reason would make it difficult to answer RQ2. (3) For pragmatic reasons the ISDP should be located in Germany and scheduled for a duration between six and 18 months. We expected this period of time to be necessary to observe sufficient relevant situations with respect to our research questions.

We chose a strategically important project of a leading international insurance company located in Germany that fulfilled all of our criteria. In section 3.1, we explain the experiences with our search for an adequate ISDP in detail.

2.5 Data Sources

Multiple data sources are essential to clarify meaning by identifying different ways a phenomenon is seen (Stake 2005). In order to get an in-depth understanding of the investigated ISDP, we seek to analyze the project based on all available data sources.

During the requirements elicitation phase, at least one researcher was on-site every day, participating in meetings, formally and informally interviewing project team members as well as analyzing documents at the project's hard drives. Additionally, the company granted us access to the project's RE management system and the emails of key project members. In our case study, three researchers were involved in data collection on-site. Experiences with data collection and data analysis based on this approach are discussed in section 3.2 and 3.3, respectively.

2.6 Researcher's Involvement

In our case study, we adopt the role as neutral observers. According to Walsham (2006, p. 321), neutral means that "the people in the field situation do not perceive the researcher as being aligned with a particular individual or group within the organization, or being concerned with making money as consultants are for example, or having strong prior views of specific people, systems or processes based on previous work in the organization."

We extend this definition. In our study, neutral also means trying to influence the observed phenomena at a minimum as we want to learn from a reality which is as least affected from our appearance as possible. Of course, given our interpretive position and the connected assumption that "people create and associate their own subjective and intersubjective meanings as they interact with the surrounding world" (cf. section 2.2), this is a difficult task. It is nearly impossible for the researcher to have no impact on these issues but his or her aim should be to minimize this impact. We aim to avoid strong influence on the case study participants regarding our research questions and the objective of investigation. Thus, our case study's researcher should actively avoid influencing the identification of requirements risks and the choice of requirements techniques to cope with these risks. Consequently, the observed behavior should then be similar to the behavior without an observing researcher. We discuss this issue in more detail in sections 3.1 and 3.2.

The risk of influencing the object under investigation is the downside of our approach. Nevertheless, we accept this downside as we thereby gain the following advantage of our continuous on-site presence: The potential to get in-depth access to the project and its stakeholders, issues, and data.

3 EXPERIENCES AND RECOMMENDATIONS OF DOING INTERPRETIVE CSR

In this section, we present our recommendations how to conduct interpretive CSR in IS based on our experiences with the research design explained above. We believe these recommendations to be especially helpful for IS researchers who are new to the CSR methodology. Nevertheless, experienced IS researchers may find some worthwhile suggestions for their research as well.

We developed our recommendations by reflecting on our experiences with our case study. Subsequently, we presented the recommendations in a workshop on empirical research in RE with 22 participating experienced researchers. Discussing our recommendations and the underlying anecdotal evidence led to some minor modifications in order to clarify their meaning. The workshop participants agreed to our advices' expected value. Nevertheless, we do not claim the recommendations' usefulness for every setting. Thus, they should not be seen as prescriptive, but instead as descriptive issues for consideration. Many of these also may have downsides. We discuss those of which we are currently aware in the corresponding section.

Our recommendations are threefold: (1) initiation of our case study, (2) data collection, and (3) data analysis. However, we did not perform the three parts of our case study sequentially. During initiation, we already collected first data. Furthermore, data collection and data analysis go hand in hand in interpretive research with no clear demarcation between the two processes (Myers and Avison 2002). Table 1 summarizes our recommendations.

Our recommendations do not cover how to report research results as we believe that there is sufficient literature concerning this topic (e.g., Wolcott 2001).

Phase and Objectives	Recommendations
Initiation • avoid wasting of time and resources • create a positive attitude towards the case study at the potentially cooperating organization	Search for different partners at the same time
	Keep documents simple and practitioner-oriented
	Find a champion
	Address gut feelings
	Take more than you need
	Clarify conditions and expectations
Data Collection • getting access to all relevant data in terms of quantity and quality	Build trust
	Collect data broadly
	Take notes without attracting attention
	Share impressions with research colleagues
	Carefully involve the champion
	Remind project team of your presence
Data Analysis • deriving meaningful insights in a comprehensible way	Regularly reflect on what you have learned
	Make use of software tools
	Reflect with practitioners

Table 1. Recommendations for conducting interpretive CSR.

3.1 Initiation

The main question during the initiation of our case study was how to assure getting access to an adequate ISDP. The following recommendations may help IS researchers in accessing a case company for their research projects. The objectives of the recommendations stated in this section are to avoid wasting of time and resources and to create a positive attitude towards the case study at the cooperating organization. This should finally lead to getting all relevant data during data collection.

Although the topic 'initiation' is addressed by Darke et al.'s (1998) discussion of practical challenges in CSR, our recommendations to some extent differ from theirs. We agree with their recommendations

to have interesting and important research questions for the potential participant organization and to have an agreement concerning confidentiality requirements and publishing rights. According to our experiences, obtaining the participation of organizations in an in-depth interpretive single case study demands a more intensive initiation approach as such type of research requires more effort for the organization compared to other settings. Therefore, we add the following recommendations to Darke et al.'s (1998).

3.1.1 Search for different partners at the same time

When starting to search for an ISDP with certain characteristics (cf. section 2.4), we first focused on a single company. Given the huge amount of confidential data needed, we participated in many meetings with the company's managers on different hierarchical levels to get their approval for our case study. After deciding to embark on our case study, the company started to search for an adequate ISDP. However, it took a couple of months and many meetings with the company's project leaders to realize that we were in an impasse: The organization was not able to assign an adequate ISDP to our case study. We had lost plenty of time by negotiating with a single company. After this experience, we changed our strategy. Thus, we recommend contacting a multitude of companies at the same time.

3.1.2 Keep documents simple and practitioner-oriented

When we started to search for a partner and an adequate ISDP, we sent out a two-page plain text letter, including our research goals and a request for cooperation. This is in line with Darke et al. (1998) who recommend using a brief covering letter, adding attachments outlining the proposed timeframe, case participants' involvement and the expected research outcomes, especially their value to the participant organization.

For obtaining access to an organization in an in-depth interpretive single case study as ours is, a multitude of meetings is necessary according to our experiences. In the beginning, we used a 20-slide presentation to explain the research problem, our goals, the methodology, and a detailed current status of our research results. Our intention was to help the recipient develop a comprehensive view on our research project. As a result from our first meetings, we have learned that this was too much information. Practitioners are mainly concerned with potential benefits for the company and do not like to be bothered with additional information. Thus, we extremely shortened our presentation. With seven slides, each of them directly addressing issues of our planned case study – especially potential benefits for the company - we kept it simple and practitioner-oriented. This format led to much more efficient meetings.

3.1.3 Find a champion

On our way to get access to an ISDP, we had to convince a lot of people. In such cases, a champion (Benjamin and Levinson 1993) helps to assure the necessary support. It is import to differentiate between a real champion and someone who just pretends to support the case study. At the company that finally participated in our case study, we had strong support by a champion, belonging to the company's middle management. He accompanied us in meetings with project leaders of considered projects. In these meetings, he helped to convince the project members to participate in our case study. The champion explained the strategic usefulness for the company and therefore, the ISDP team is expected to join our case study. Besides the support in these official meetings, he carefully influenced critical project members in informal conversations and constituted a positive attitude towards our case study.

Of course, it might be difficult to identify such a champion. Consequently, a downside of this recommendation might be that someone is wrongly expected to be a champion. Therefore, you should prove this assumption before you rely too much on his or her support.

3.1.4 Address gut feelings

As we have learned during the initiation of our case study, not everybody can be convinced by factual arguments. Some people follow their gut feelings which need to be addressed. This is an issue described by personality type models such as the Myers-Briggs Type Indicator (Briggs Myers and Myers 1995).

During our initiation meetings, we met a lot of project members whom we granted confidentiality and anonymity and explained that our research results will not have any negative consequences for them. Nevertheless, we needed intensive one-to-one conversations to overcome their skepticism. We explained our personal motives in conducting this research project, giving them an opportunity to become acquainted with us and thus convincing them to trust us.

To the best of our knowledge, this aspect is not yet covered in methodological literature on CSR. Nevertheless, we believe it to be important, especially in single case studies like ours. In such a setting a lot of people need to be individually convinced before the organization decides to join the research project. A problem in applying this approach is the identification of the 'personality type' of someone you need to convince. If your assumptions are wrong, this measure might be counterproductive.

3.1.5 Take more than you need

Our research design demands us to observe just one ISDP. Nevertheless, we recommend starting to observe more projects if possible. At our partner company, we initially observed two projects, with the intention to drop the less interesting project after a couple of weeks or months. This turned out to be a good decision: One project showed a lot more potential for our research topic because of more situations dealing with requirements risks. Before you begin to observe a project you do not know the data you will finally get.

This recommendation's main downside is obvious: Observing multiple projects in parallel is resource intensive. Therefore, the less interesting project should be dropped as soon as possible. This leads to another challenge: It might be difficult to judge which of the observed projects is more interesting. Fortunately, this decision was very easy in our case study as one project served a lot more situations dealing with requirements risks. We needed these situations to answer our research questions (cf. section 2.1).

3.1.6 Clarify conditions and expectations

Conducting an in-depth case study in a RE context implies having a lot of stakeholders at the company's site, e.g., the company's management, the project leader, software developers, business analysts and customer representatives. Each of them has different expectations concerning the case study's output. When you introduce yourself to a project team, you should clearly state, what deliverables your case study will have and how each stakeholder might benefit from them. This helps to strengthen their commitment to the case study and avoids having frustrated stakeholders at the end of your research. Additionally, a clarification of the data collection conditions is needed at the beginning of a case study. We made sure that everyone in the project knew what kind of data we are interested in and that it is important for the success of our study to receive all relevant information regarding our research questions. Thus, we encouraged the project members to forward us all information possibly relevant for us.

This recommendation is mainly in line with Darke et al. (1998) but it seems important to stress that you should try to clarify expectations not only with the person who finally decides on joining the research project but with every case study participant you will get into closer contact during the case study. According to our experiences, this leads to better collaboration.

3.2 Data Collection

This section's recommendations' main objective is to support IS researchers in getting access to all relevant data. Not only the quantity of data but also the quality matters. It is important to assure that project members tell you what they really think. Otherwise it would not be possible for the researcher to come to valid interpretations. We decided to exclude the arrangement of certain data collection methods from this section, as we believe that these aspects are already covered in more detail in literature (see e.g., Kvale and Brinkmann 2009, Kvale 2007 for interviews or Rapley 2007 for conversations and documents).

3.2.1 Build trust

Case study participants grant access to the information you need only if you are trustworthy. Otherwise, they will tend to hide potentially critical or harmful information. Consequently, we invested plenty of time in networking with project members, e.g., by meeting for lunch or dinner, participating in project team events and informal conversations. These meetings were mainly about non-research related topics. Nevertheless, we did not interrupt our dialog partners when they referred to project related issues. It even occurred that they asked for our opinion regarding other project members or they tried to get information which they assumed we received from another project stakeholder. In these situations, we consequently showed our integrity and confidentiality by neglecting any answer. In most cases, this did not lead to any resentment but to more trustful conversations, containing interesting information regarding our research questions. Nevertheless, it is important to keep a professional distance from each project member. Otherwise, the researcher may become socialized to their specific views and thus may loose the benefit of a fresh outlook on the situation (Walsham 2006).

As discussed in section 2.6 we aimed to act as 'neutral observers'. We believe that the trust building measures above did not affect the case study participants' behavior in terms of our research questions (cf. section 2.1) significantly as most of our measures to become trustworthy in the case study participants' view were only about non-research related topics.

3.2.2 Collect data broadly

It seems obvious that you should have a clear focus in the data collection within an in-depth case study. Some authors encourage the researcher to outline in detail, prior to site visits, the data to be gathered, for instance a list of materials to be collected, questions for interviews and concrete plans for direct observations (e.g., Benbasat, Goldstein and Mead 1987). In our opinion, limiting the focus too much would be a mistake. During our case study, we participated in a multitude of meetings, which initially just had a peripheral link to our research questions, e.g., effort estimations or conversations about training courses. However, during these meetings, issues aroused which directly affected them. Consequently, we recommend using every opportunity to gather data which may help to answer the research questions. This means that for example the decision whether to observe a meeting should not solely depend on the planned topic but on the list of scheduled participants as contents may shift occasionally.

This broad collection of data allows for data triangulation. It is important to mention at this point, that it might occur, that some data sets seem to point in different directions. In such situation, it is important to justify why you follow one or the other direction. For instance, data from one interview seems to be more valid than data from another. Then, you should be able to argue why you are able to judge the data reliability. We agree with Mason (2002, p. 190) that "the concept of triangulation [...] encourages the researcher to approach their research questions from different angles, and to explore their intellectual puzzles in a rounded and multi-faceted way." This enhances validity, in the sense that social phenomena are seen as more than one-dimensional, and the case study covers multiple dimensions. We like to stress, that this viewpoint is based on our interpretive position (cf. section 2.2).

The downside of this approach is that you will really get a lot of data which you will have to handle. Recommendations regarding this aspect are given in section 3.3.

3.2.3 Take notes without attracting attention

It is important to take notes when you are observing a meeting or talking to project members in order to preserve the information. Taking notes just may become a problem if you do it very conspicuously. In one of our first meetings at the observed ISDP, we continuously took notes. This seemed to irritate some project members. Apparently, we influenced them and some started to be afraid of giving critical comments in the meeting. After a while one participant said: "I would like to know, what you are writing down all the time". For future meetings we learned to behave differently. We were noting keywords, sometimes delayed, e.g., not directly after critical comments are expressed. The notes were completed after the meeting was finished. With regard to informal conversations, we took notes only afterwards. This is for the same reason – we do not want to scare the project members.

In our view, the same counts for tape recording. Although this measure is recommended by other authors (e.g., Darke, Shanks and Broadbent 1998), we recommend to abandon this in interpretive case studies. This measure may also lead to inhibiting the participants with the consequences described above.

Of course, this recommendation has an obvious downside. How to assure getting all relevant data? Especially less-experienced researchers may have problems to judge if a piece of information is relevant at the point of its occurrence. Thus, it could be an option to have two researchers interviewing or observing together (Darke, Shanks and Broadbent 1998), and sharing the impressions afterwards (cf. also section 3.2.4). Due to resource constraints, it might be difficult to implement such a setting over the whole time of an in-depth single case study. We used this approach only at the beginning of our study in order to learn more about how to judge if a piece of information is relevant by reflecting with the research colleague afterwards.

3.2.4 Share impressions with research colleagues

As stated above, three researchers were collecting data on-site simultaneously. We did not divide the data collection in different topics due to pragmatic reasons. We avoided the necessity of having each researcher on-site every day. Consequently, different researchers got into contact with the same topics and project members during their on-site presence. If you follow this approach, you need an intensive and regularly sharing of impressions between the researchers, mainly because of two reasons. (1) Project members do not like to be bothered by being asked the same questions twice. (2) In order to understand current discussions, the observing researcher has to be up-to-date concerning the state of the ISDP.

In different settings it could make more sense to divide data collection in different topics. For instance, if one researcher is an expert for a particular topic within the case study he or she should be responsible for this work stream. Nevertheless, sharing impressions from time to time remains important as the different topics may be interrelated.

3.2.5 Carefully involve the champion

In section 3.1, we stated that a champion is very useful for the initiation of a case study. Of course, the champion can also be helpful during data collection, but you should involve him very carefully. We rarely involved him, just in case of challenges which had their origin beyond our sphere of action. Thereby, we avoided having project members feeling under pressure because of the champion's presence. Such pressure could lead to decreasing trust towards the researchers from the affected case study participants (cf. section 3.2.1). Another undesired consequence of involving the champion could be the influence on the case study participants regarding our research questions in so far as his action changes the world under investigation. Nevertheless, we stayed in close contact with him, e.g., through weekly lunch meetings, in order to assure his support in potential crisis situations.

3.2.6 Remind project team of your presence

In our case study, we learned that after a while some people tended to forget us. We expected this behavior and thus did not rely on actively being informed about every new development by the project team, e.g., in form of scheduled appointments. Consequently, we implemented some counteractive measures. For example, we assured access to the key project team members' online calendar and checked regularly if there were any relevant meetings to which we were not invited. In such cases, we politely asked the meeting's organizer for his or her permission to participate. Afterwards, we explained again that it is very important for our study's success to get all relevant information regarding our research questions. Usually, the effect was that this ISDP team member got a bad conscience. He or she then promised to keep us better in mind and in most cases his turned out to be true. In the following weeks, the information flow concerning the affected project team member was much better than before but sometimes after a while experienced another worsening. Therefore, you should remind the project team members of your presence from time to time.

3.3 Data Analysis

This section's recommendations aim to support researchers in deriving meaningful insights during data analysis in a comprehensible way. We do not cover how to analyze certain data types as such guidelines already exist (e.g., Miles and Huberman 1994). Instead, we discuss practical difficulties concerning data analysis.

3.3.1 Regularly reflect on what you have learned

We followed Walsham's (2006) recommendation of preparing sets of themes and issues after a certain period of data collection that is after a set of interviews or meetings. This first analysis requires a reflection of previous insights and may also lead to redirections in data collection. As interpretive researchers, we are aware of our subjective views on the elicited data (cf. section 2.2). Each researcher involved creates a subjective and independent view of the world under investigation. Consequently, each researcher involved should independently summarize his or her findings from time to time. Consolidating the individual insights leads to a more holistic picture, representing all perceptions and thoughts.

3.3.2 Make use of software tools

Even though we agree with Walsham (2006, p. 325) that "software does not remove the need for thought, as the choice of themes remains the responsibility of the researcher", we recommend making use of software tools. During our case study, we collected a multitude of data. According to our experiences, it is very helpful to use a software tool to support the qualitative data analysis, such as QSR Nvivo, the product we use. Such a product is helpful to arrange the data and facilitates collaborative work with multiple researchers (Bazeley 2007). Furthermore, the software tool is helpful to justify your findings with evidence as it helps to link findings back to the original data that supports it.

3.3.3 Reflect with practitioners

Given our positioning as interpretive researchers, we understand phenomena through accessing the meanings that participants assign to these phenomena (cf. section 2.2). These meanings are not obvious in every case. To avoid misleading conclusions, you should reflect preliminary perceptions and interpretations in informal meetings with practitioners. In some cases, this led to interesting reinterpretations of observed phenomena, such as motives for choices between different RE techniques. This is in line with recommendations given for engaged scholarship (e.g., van de Ven 2007).

Reflecting with practitioners has also pitfalls. Given our intention to influence case study participants as least as possible regarding our research questions (cf. section 2.6), the reflection should be carefully conducted. Discussing a situation with a practitioner may lead to a different behavior in similar situations next time. Consequently, the informal interviews should be planned in advance and kept in mind for future situations.

4 CONCLUSION AND LIMITATIONS

We derived this article's 15 recommendations from our own experiences in conducting an interpretive in-depth single case study. Due to their nature, these recommendations are subjective. Not every recommendation may turn out to be useful in every setting as they are derived from our specific context. Thus, they should not be seen as prescriptive, but instead as descriptive issues for consideration. Nevertheless, we believe that the recommendations stated above will help less-experienced IS researchers in conducting such a case study.

We believe that concrete experiences concerning the adoption of a research methodology help to further develop that methodology. Therefore, especially experienced researchers are requested to share their knowledge of the methodology-in-use. Different settings may lead to different needs concerning the research process. Thus, we encourage the research community to debate different ways how to conduct CSR. Researchers applying research designs similar to ours (cf. section 2) could share their opinion regarding our recommendations and add their experiences and possibly more recommendations in order to further develop the interpretive CSR methodology in IS. Additionally, researchers applying different designs, for example multiple case studies or retrospective studies, can further develop the methodological literature by adding recommendations concerning practical challenges they have faced. We hope that our recommendations are also inspiring for those experienced researchers and therefore lead to improvements in their future research projects.

A next step to further develop the CSR methodology in IS is to systematically analyze published case studies in leading IS journals. The last study doing this (Dubé and Paré 2003) focused on positivistic case studies. We believe that interpretive approaches also have merit and thus should be included in an updated overview. Such an analysis may lead to some innovations in the use of CSR in our community (cf. Piekkari, Welch and Paavilainen 2009).

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