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Empirically Driven Research in Centres of Excellence - A Proven Approach for Management Science

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Abstract

In this paper we combine several research techniques mainly used in social science in order to derive a practically proven theory. The research approach integrates the researcher into the research process as a "director" and "actor". We describe an approach containing several phases including targets, research techniques, actions and results. Our approach combines practical solution approaches with theoretical approaches and has been successfully applied successfully within two research projects. The main characteristics of our approach are continuous focus group interviews, a closed research loop combining information gathering, analysis as well as theory building.

Keywords

Grounded theory, case study research, action research, explorative study, empirical research

1. Introduction

The academic world has a variety of research approaches at its disposal. However currently there are existing less research approaches that are organized as process and include several research methods that connect academia with practice. In this paper we make use of existing research methods mainly applied in social science in order to derive a practically proven theory. We integrate the researcher into the research process as a "director" and "actor" and develop an approach containing several phases. Our approach combines practical solutions with theoretical approaches.

Our paper is organized as follows. Firstly we state the theoretical background containing our applied research methods. Secondly, we define the research objectives and research questions. Next we describe our empirically driven research approach. Then we present two research projects in which we have applied our approach successfully. In the contribution section we summarize our main findings and the advantages of our solution for research. Finally we describe limitations of our research and define options for further research.

2. Theoretical Background

Theory can be built on the basis of the grounded theory approach (Glaser and Strauss, 1967; Martin and Turner, 1986; Glaser, 1992; Baskerville and Wood-Harper, 1998; Kromrey, 2007). The foundation is laid by data collection and analysis. The theory is build by iteration of data collection and analysis in order to integrate practical, rather than abstract experience (Kromrey, 2007). Practice can be integrated using exploratory studies, case study research, focus group interviews and surveys.

An explorative study is applied to identify the practical gap that is still vague and that has not been clearly defined which means that a problem is still in a preliminary stage (Babbie, 1989).

Case study research (Benbasat et al., 1987; Eisenhardt, 1989; Yin, 1994; Stake, 1995) analyzes remarkable cases, describes them and develops empirically founded theoretical concepts (Kromrey, 2007).

In focus group interviews a group of people are asked about their opinions, beliefs and attitudes regarding a product, service, concept, advertisement, idea or packaging (Henderson, 2009). In addition to interviewing the participants, discussions contributed to data and insights that would be less accessible without interaction found in a group setting (Lindloff and Taylor, 2002).

Approaches that connect researchers with practitioners are the "Socio Economic Approach to Management" and the "Appreciative Inquiry". Both approaches have organization development in focus and are structured in a process (see Sorensen et al., 2010).

3. Research Objectives and Questions

Existing approaches combining empirical experience with research and integrating the researcher not only as a "director" but as an "actor" are not sufficient. The objective of our research is to make use of existing research methods from management and social science (1), to apply them within management science (2), to integrate the researcher as an actor into the research process (3) and develop an approach that builds theories tested in practice (4).

Based on these research objectives we derive the following research questions:
- How can qualitative research be established in management research by integrating companies (empirical evidence)?
- How can existing research methods be combined to an approach?
- How can the researcher be integrated into the research process?
- How can the theoretical approach developed be verified on a broader scale within a quantitative study?
- How can a proof of concept be gained by integrating the results into practice?

4. Empirically Driven Research Approach

Based on the research objectives and research questions we develop a research approach that combines existing research methods. We applied empiricism in order to build theories combined with literature review. Case study analysis is conducted via desk research (homepage, brochures, press releases) and structured in a data base. Action research and focus group interviews were embedded in workshops of the "Centre of Excellence for Sales Management in Business-to-Business Markets" and the "Centre of Excellence Future of eLogistics".

We developed a process including the following phases: initiation (1), integration (2), information gathering and analysis (3), theory building (4) and theory verification (5). Figure 1 shows our approach including phases with targets, research techniques, actions and results.

We describe each phase of the empirical driven research approach with the following content:
- Targets: what are the targets of the phase?
- Research techniques: which research techniques are applied in the phase? What is the reason for their application?
- Actions: what are the actions required in the phase?
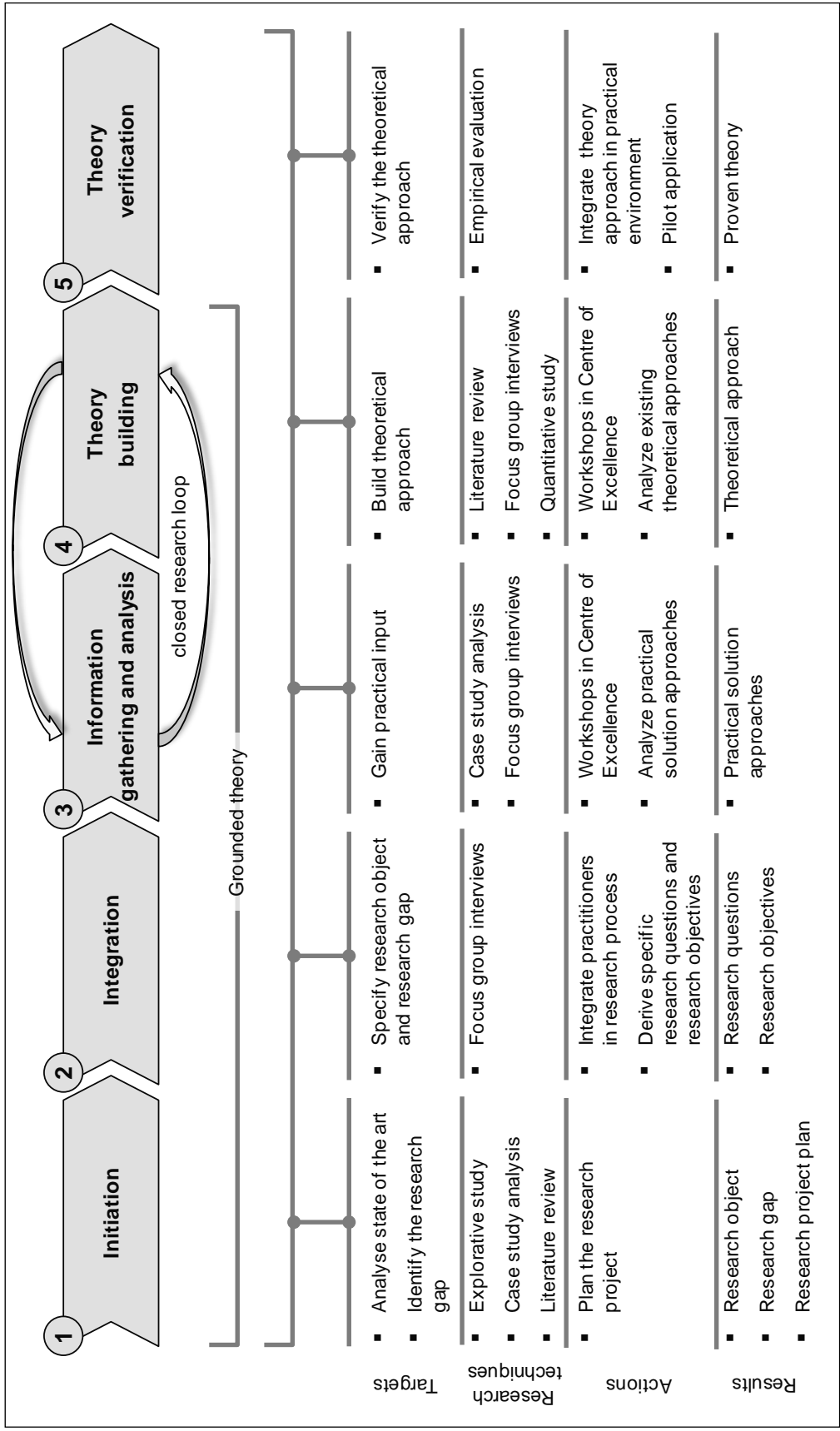- Results: what are the results of the phase?

	1 Initiation	2 Integration	3 Information gathering and analysis	4 Theory building	5 Theory verification
Targets	▪ Analyse state of the art ▪ Identify the research gap	▪ Specify research object and research gap	▪ Gain practical input	▪ Build theoretical approach	▪ Verify the theoretical approach
Research techniques	▪ Explorative study ▪ Case study analysis ▪ Literature review	▪ Focus group interviews	▪ Case study analysis ▪ Focus group interviews	▪ Literature review ▪ Focus group interviews ▪ Quantitative study	▪ Empirical evaluation
Actions	▪ Plan the research project	▪ Integrate practitioners in research process ▪ Derive specific research questions and research objectives	▪ Workshops in Centre of Excellence ▪ Analyze practical solution approaches	▪ Workshops in Centre of Excellence ▪ Analyze existing theoretical approaches	▪ Integrate theory approach in practical environment ▪ Pilot application
Results	▪ Research object ▪ Research gap ▪ Research project plan	▪ Research questions ▪ Research objectives	▪ Practical solution approaches	▪ Theoretical approach	▪ Proven theory

Grounded theory

closed research loop

Figure 1: Empirical driven research

The following figure shows the results of each phase (adjusted from Fleisch, 2001 and Riempp, 2004). The figure illustrates that some results (starting from research questions) have an effect on the previous phase and the results by providing input for adjustments during the research project.
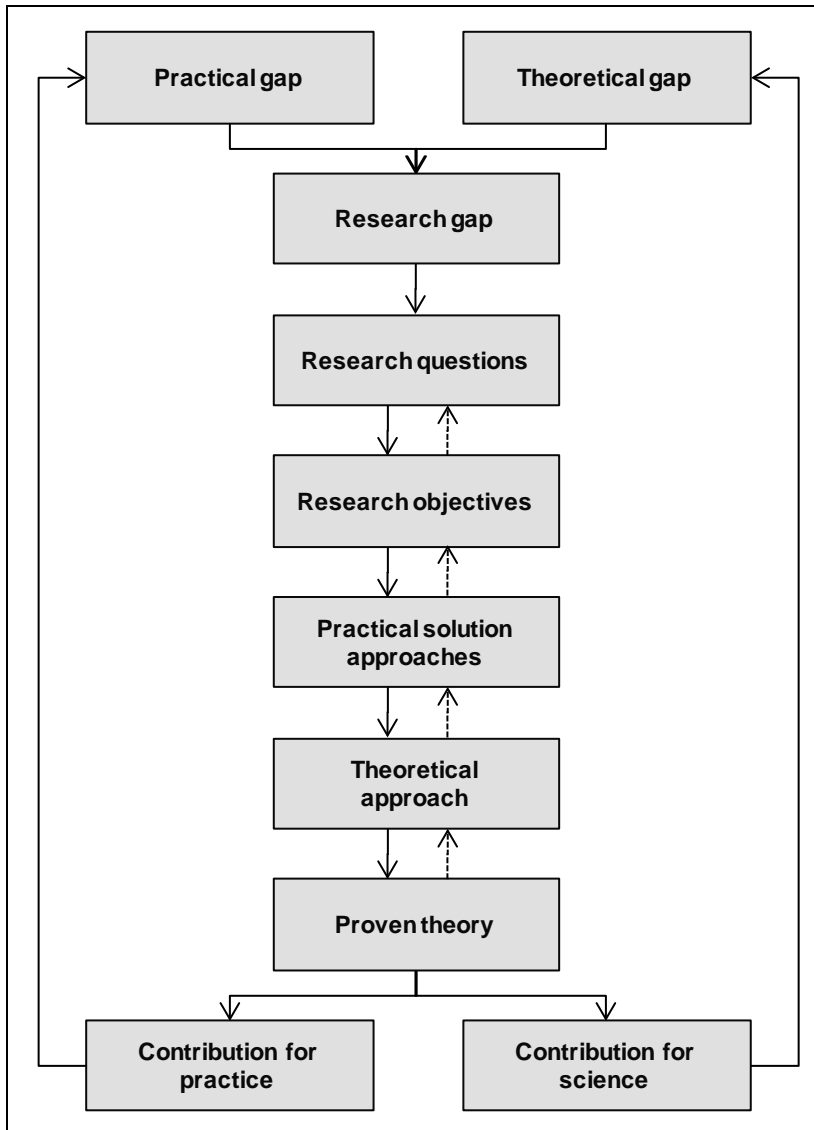

Figure 2: Order of the results gained in each phase.

4.1 Phase 1: Initiation

Target

The initiation phase is the starting point of the research project. In this phase we aim at establishing the state of the art and identifying the research gap.

Techniques

We apply an explorative study and analyze case studies of specific topics in companies in order to gain insight on practical requirements and practical research gaps. The practical implications are important to obtain gaps in practice but without providing any solutions. In addition a literature review provides more detailed information on theoretical gaps.

Based on the results of the explorative study, the case study analysis and the literature review we identify the scope of the research project and the research object. The practical gap and theoretical gap represent the research gap.

Actions

The major action within the initiation phase is to plan the research project, including the working packages and milestones. Another task is to search and select research partners from practice in order to integrate them into the research project.

Results

The results are the defined research object and the identified research gap. Another result is a project plan including work packages and milestones.

4.2 Phase 2: Integration

Target

The target of the integration phase is to specify the pre-defined research object and research gap.

Techniques

In this phase we apply focus group interviews conducted in bilateral interviews and the kick-off workshop of the research project. These interviews provide the practitioners' requirements within the defined research object.

Actions

The selected partners from practice are integrated by focus group interviews into the research project in order to specify the research objective and research gap.

Results

As a result of this phase specific research questions and specific research objectives are defined.

The following phases "information gathering and analysis" and "theory building" are iterative and provide the opportunity for practitioners and academics to practice research before, during and after workshops. We call this the closed research loop.

4.3 Phase 3: Information gathering and analysis

Target

The target of the "information gathering and analysis" phase is to gain practical input under reflection of theoretical approaches. According to the research objectives it is necessary to apply the right research techniques.

Techniques

Therefore we apply case study analysis in order to gain information on implemented solutions in practice. These examples are the input for focus group interviews. In contrast to the case study research of phase one where we identified the practical gap, we now obtain practical solution approaches. Focus group interviews are applied to discuss and adjust theoretical approaches integrating practical experience.

Actions

In this phase we concentrate on the execution of workshops with partners from practice. In between workshops the communication between the researchers and partners takes place via phone/mail in order to prepare the workshops which leads to a more focused process.

The "arena" of the workshops is a "Centre of Excellence" where academia meets practice and the research techniques introduced can be applied in order to analyze and integrate practical solution approaches and to develop a new theoretical approach.

Results

The results of this phase are practical solution approaches, examples and discussions on existing theoretical approaches. All results are documented in a protocol with notes and documents which are the basis for the development of the theoretical approach.

4.4 Phase 4: Theory building

Targets

The target of this phase is to build a theoretical approach on the basis of the pre-defined practical approach.

Techniques

A literature review examines existing theoretical approaches. The theoretical approaches together with the gained practical approaches represent the basis for the focus group interviews in order to build a new theoretical approach. A quantitative study among companies is applied in order to verify the theoretical approach developed on a broader scale.

Actions

Similar to phase three, the major task is the execution of workshops. We also analyze existing theoretical approaches which are reflected in each workshop which represents the before mentioned closed research loop.

Results

The result of this phase is a new theoretical approach, based on the previous gained results and grounded in practice. Similar to the previous phase the new theoretical approach is documented in a protocol with notes and documents.

Phases one to four represent the grounded theory where the development and foundation of theories is made by data collection, analysis and iteration of collection and analysis in order to integrate practical experience (Kromrey, 2007). Due to the fact that the research partners remain the same we have a continuous focus group for conducting the interviews.

4.5 Phase 5: Theory Verification

Target

In this phase we verify the derived theoretical approach.

Techniques

Empirical evaluation is used in order to test, complete and verify the theoretical approach developed.

Actions

We test the theoretical approach by integrating it into a practical environment. This is be done by a pilot application. Based on the feedback gained, the theoretical approach can either be adjusted or finally approved.

Results

The result of the fifth phase is a proven theory. The theory can be either the description of a method or a solution. The derived theory answers the research questions of phase two.

4.6 Role of the researcher

The challenge for the researcher is to be a "director", managing the research project, moderating workshops, observing and at the same time being an "actor", giving input and developing the theory approach. Besides the mentioned challenges, the researcher has to deal with practical problems (content), apply scientific methods in order to solve these problems and reflect the solutions.

4.7 Quality criteria

In order to reach a high validity of the results (Denzin, 1970) we applied triangulation in two ways. Firstly, we combined different existing approaches in order to utilize existing advantages (Denzin, 1970). Secondly, we apply one single method in several ways, which provides data from several sources.

Reliability of our approach is ensured by documenting the research project in a protocol with notes, documents and workshop results. The data gained form an empirical data pattern in combination with case studies and literature review are the basis for the developed theory.

Objectivity is ensured by the presence of at least two academics in each workshop and subsequent data analysis.

Generalizability of our approach is a challenge, which requires and adaption of the approach to the need of the particular research project.

We applied the empirically driven research approach in two research projects. In the following paragraph we introduce these two projects.

5. Applying our approach in research projects

5.1 *"Centre of Excellence for Sales Management in Business-to-Business Markets"*

The "Centre of Excellence for Sales Management in Business-to-Business Markets" is a research project at the Institute of Technology and Process Management at Ulm University combining academia with practice. In the following section we describe the application of our approach for each phase.

Initiation

The explorative study was conducted with practitioners and helped, together with the documentation of case studies to define the specific research objective and the practical gap. The research objective of the project is business-to-business markets, business models and reference processes in sales management. The practical gap was the lack of existing business models for business-to-business markets. Customers have also higher requirements and complex sales behaviour often causes individual sales. Often processes in sales were not clearly defined.

Within the literature review we identified the following research gaps:

- no existing procedure for the development of business models on an industry level
- no existing business models for business-to-business markets
- no existing reference process model for sales management in business-to-business markets.
- no future business processes for sales management in business-to-business markets applying new technologies (e.g. mobile device) and decision techniques.

Integration

Based on the research field and the research gap we identified research questions and research targets in focus group interviews. The main research questions were:

- How does a procedure for the development of business models on an industry level look like including future developments, challenges and needs for customers?
- How do generic business models in business-to-business markets look like?
- How can processes be derived on the basis of business models on an industry level?
- How does a reference process model look like for sales management in business-to-business markets?

Based on the research question we derive the following research targets:
- the development of a procedure for business model innovation on an industry level
- the application of the procedure for business models in business-to-business markets
- the derivation of sales management processes for each business model.

Information gathering and analysis, theory building

In order to achieve the research targets we applied case study research and focus group interviews. The focus group interviews were conducted in workshops connecting practitioners and academics. From May 2010 to November 2010 seven workshops were conducted with seven to ten practitioners from three companies. The practitioners represented different fields of expertise (market development, strategic planning and sales management). The criteria for the selection of a company were: international focus and innovativeness regarding their business model. The duration of a workshop was 4-8 hours. Three academics were permanently involved.

A workshop usually had the following structure:
- review of the results from the previous workshop
- presentation and discussion of existing theoretical approaches and case studies
- focus group interviews and design of theoretical approaches.

During the workshops we analyzed and discussed existing theories, business models from literature, case studies and external drivers.

As a result we established a stage gate process for business models on an industry level. We derived business models for industries (1) and generic business models for business-to-business markets (2). The generic business models for business-to-business markets include the market provider, the finance provider, the sustainability provider, the product provider, the service provider, the people provider and the network provider. The seven business models have been described with their elements on a structured way.

Theory verification

The developed procedure and generic business models are part of another research project on-site of one participating company. Therefore an empirical evaluation is conducted where the procedure is tested and applied to develop business models on a company level. Within the project the generic business models for business-to-business markets are also tested and integrated within the development of the company business model.

Next steps

Based on the business model, we plan to derive reference processes for sales management and to conduct a broad study in order to gain further input for the generic business models and the reference process model.

5.2 *"Centre of Excellence Future of eLogistics*

In order to be successful in the future, it is important for companies to set up strategies along future requirements. Therefore companies need to obtain an idea of the future developments. Even if future developments are not predictable, the future will be designed by the environment. Dealing permanently with possible future developments enables companies to react to environmental changes in good time.

Initiation

Our research project at the Ulm University is dealing with the downstream logistic chain. Thus logistic processes play a central role to secure the competitive position. The research project "Centre of Excellence Future of eLogistics" will answers the questions:

- How will scenarios within the logistic industry look like?
- Which will these scenarios influence the logistics process?

Integration

Due to the fact that the research field of logistics is diverse, the partners of the project focused on a certain industry field as a reference process. We need a reference process that can be easily transferred to other industries. Therefore we chose the pharmaceutical industry as a reference and focus on the downstream supply chain for the following reasons.

The pharmaceutical industry needs to deal with high legal requirements for the logistics system because of the handling of delicate goods. The pharmaceutical supply chain is a global, multi-stage logistic chain with intermodal hubs and a large range of goods. Furthermore the pharmaceutical supply chain contains B2B and B2C distribution channels. Therefore we were able to integrate the several different requirements of our partners.

Information gathering and analysis, theory building

Today the pharmaceutical downstream supply chain faces several different challenges in each value creation level. The key challenges for pharmaceutical producers and our industry partners are counterfeiting security, transportation quality and product availability. For obtaining the strategic reality of the actual pharmaceutical supply chain, the current process, starting from the producer down to the end user, was analyzed regarding challenges that arise along the supply chain. These results were developed in workshops from May 2009 to November 2010 together with partner

from industry. Also several case studies were analyzed to gain information about current challenges, solutions and technologies.

Within the workshops, driving forces, based on literature review and case studies, were presented, discussed and evaluated regarding trend development, impact on the pharmaceutical industry and uncertainty of occurrence probability of the trend development. An important task of the workshop was verification and review of results derived in past workshops. The feedback loop helped to establish a high acceptance with all workshop participants and also lead to a more detailed results.

Based on the afore mentioned driving forces and challenges of the pharmaceutical supply chain, five future scenarios were developed. The scenarios provide the basis for the design of a future reference process. The future reference process should anticipate the scenario and solve the challenges along the pharmaceutical supply chain. To derive the future reference process we use a process management approach (Brecht, 2002).

Theory verification

Using the process as a basis we developed a pilot application idea. To verify this idea, we interviewed several experts of the pharmaceutical industry. This input is now used to adjust the derived idea to gain a more suitable solution for practical improvements.

In conclusion we state that the close cooperation between a research institute, using theoretical research approaches and practitioners, as presented in our paper leads to a new and practical solution.

In both Centres of Excellence the analysis of drivers, the development of scenarios and future oriented solutions enable companies to anticipate the dynamics and change of customers and markets.

6. Contributions

The main finding of our research is an approved and tested approach for empirical driven research. We combined existing research methods with a scientific management approach including the researcher as an active part within the research process. The mentioned methods in each phase can also be applied individually according to the research question.

With our approach we contribute to the current understanding of empirical research. Practitioners and researchers will find a useful approach in joint research. It enables the development of new theories based on empirical needs.

7. Limitations and Further Research

This paper describes an approach for empirical driven research in Centres of Excellence. Although we integrated several research methods in order to practice triangulation, generalizability remains a challenge. Therefore the approach has to be adapted to the need of each new research project.

Several issues await further research. Firstly, the experience gained within the two research projects will improve the approach. Secondly, criteria for a measurement of the results of each phase need to be developed.

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