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Sharpening the knowledge domain transfer in practice research design: The BPM assessment

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Abstract

The practice research design described in this paper is based on the common interest of Telge AB and Karlstad University to explore knowledge transfer from research results to their use in practice when applying a Business Process Management (BPM) maturity assessment model. In our case study, we explore how knowledge transfer can become explicit, based on components in the foundation of practice research and a mapping of the practice research process. The main idea is to contribute to the articulation of sharpening the knowledge transfer in practice research design. Our findings show e.g. the importance of enabling practitioners in finding the research results, using an explicit model package to gain understanding and guidance towards the intended way in which the practitioners are supposed to use the knowledge, as well as prerequisites in the knowledge domain. Additionally, the complexity in the BPM maturity concept and challenges in the knowledge domain transfer are findings that can lead to bridging the gap between a BPM maturity assessment model in theory and lessons learned from using the model in practice. Finally, the paper contributes with a knowledge domain transfer loop model to be used in planning and evaluating practice research between practitioners and research stakeholders as well as a snapshot of practice research design to be used to communicate key elements as pre-conditions for the knowledge domain transfer.

Keywords: Practice research design, knowledge domain transfer, snapshot, BPM maturity assessment.

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1 Introduction

Business process management (BPM) needs a holistic understanding (Rosemann & de Bruin, 2005) for identifying, describing, analysing, designing, measuring, improving and monitoring business processes in organisations (Rohloff, 2009). Initially, BPM was a management approach with a focus on information technology (IT) as an enabler to business improvement (Davenport, 1993; Hammer, 1993). However, there

is now a growing awareness that BPM requires an integrated approach and holistic perspective, beyond a purely IT focus. In addition to IT, research has identified core factors in terms of strategic alignment, governance, methods, people, and culture (Rosemann & de Bruin, 2005; Rosemann & vom Brocke, 2010). Thus, BPM is comprehensive in its nature in terms of business process modelling, innovations and automation, as well as with organisation required for process orientation to work. Maturity is used as a measure to evaluate an organisation in terms of how advanced it is in BPM. Hundreds of maturity models exist in different domains such as knowledge management, personal development, and software development as well as in the discipline of BPM (Spanyi, 2004). Although there is a fair amount of empirical research relating to maturity models for BPM initiatives in organisations (e.g. Rosemann & de Bruin, 2005; Rohloff, 2009; Ganesan, 2011), there is a research gap between BPM assessment models in theory and lessons learned from the practitioners using the models in practice. Research with focus on implementing BPM maturity assessment models at various organisations is requested (Ganesan, 2011). Even though BPM is widespread and organisations are modelling, improving and executing business processes, research on the implementation and uptake of BPM is rare and calls for contributions to the general research community are made for the present research agenda on empirical evidence (ECIS, 2013; BPM, 2013).

This paper will explore the transfer of the knowledge domain from a BPM assessment model in theory (general research contribution) to the use of the model in practice. Our research can be described as practice research according to Goldkuhl (2011) as we consider the empirical case in terms of a practice and are developing knowledge through a situational inquiry. The knowledge domain in this study is BPM maturity assessment, and a shared interest to communicate and develop knowledge between actors. The business developer at Telge AB and the researcher at Karlstad University share the common interest of exploring the use of general research result in a local practice as well as developing a further understanding of the knowledge domain. A case study is conducted in a practice research design exploring practitioners' use of a BPM maturity assessment model designed by Ganesan (2011). The knowledge transfer is defined as the moments of contact and exchange between actors in interactions to produce valuable deliverables in common and different purposes (cf. Beech et al, 2010). Knowledge transfer occurs across a boundary, e.g. between people in different roles, between organisational units or between geographic areas (Argote & Miron-Spektor, 2011). The creation of useful knowledge is formulated in academia as its quality, critical approach, objectivity, utility, sustainability and relevance, embedded in people, technologies, publications and networks. Goldkuhl (2012) uses the term 'constructive knowledge', i.e. knowledge to be appreciated for being useful in action. Our intention is not to explore the concept of knowledge nor the context, the climate (Bock et al, 2005) or how knowledge is transferred, translated and transformed (Carlile, 2004). Focus in this paper is on sharpening the knowledge domain transfer captured in an assessment model to be found, interpreted, adjusted and used as a BPM assessment tool in a local practice, i.e. to become explicit based on the practical use. By mapping the model user actions and experiences we are able to identify needs of explanations to increase the usability of the content in the BPM maturity assessment model. To sharpening the knowledge domain transfer is thus in this paper defined as to support practitioners in using research results in a specific knowledge domain. Becoming explicit can be described as expressing and explaining with e.g.

illustrations, descriptions, instructions, and specifications, i.e. to explain how to use the content in the knowledge domain, in this case, the BPM maturity assessment model. The main idea in the paper is to contribute to the articulation of sharpening the knowledge domain transfer during practice research driven by the research question:

How can the knowledge domain transfer become explicit in a practice research design?

2 Research Methods in a Practice Research Design

Our study focuses on knowledge domain transfer during practice research. According to Goldkuhl (2011), some of the main ideas of practice research are: to consider the empirical field in terms of practices, to develop knowledge through situational inquiries and to produce local practice contributions of appropriate kinds (e.g. diagnosis, proposals, new artefacts) together with abstract useful knowledge to the general practice and research community. The practice research consists of two sub-practices: the situational inquiry in the local practice and theorising to the general practice and the research community, 'a relevant problem' is the input and 'usefulness of produced knowledge' is the output (ibid.). In the context of BPM, there is an urge to address real problems in real social settings to develop adequate and useful knowledge to deal with such problems. The research results and formulation of general knowledge is abstracted but should be presented in such a way that the knowledge is relevant and useful for practices outside the studied local practice (Goldkuhl, 2008).

In addition, the importance of researcher-practitioner collaborations (e.g. Mathiassen, 2002) is stressed in order to point out the necessity of addressing practical problems by focusing on actors in an organisation. Research collaboration close to the practice forms 'the unseen and unknown' into usable knowledge (Goldkuhl, 2011). In one established researcher-practitioner community (IS maintenance and evolution), the focus is to address specific organisations' challenges, general knowledge and competence needs (Nordström & Axelsson, 2011). The researcher's motives and interest are to study a local practice to understand the domain, produce useful knowledge and ensure practical relevance in research. The practitioners' motives and interests are to increase competence, be a part of a social community, to solve specific problems, as well as influence the research (Nordström & Axelsson, 2011). Thus, the knowledge domain is the link between the researcher and the practitioners. Reason & Torbert (2001) refer to the first-person inquiry as the reflective researcher who brings inquiry into everyday practice, and the second-person inquiry as the more co-operative reflection through research. The third-person inquiry engages people in a broader context or in communities to ensure a more external validity. Attending to our actions, we can evaluate whether they are achieving intended outcomes (single-loop feedback); whether they are in line within the strategies of practice (double-loop feedback); and whether the outcomes are in line within our motives for both the local and general practice (triple-loop feedback).

Producing knowledge that should be used for improving practices (e.g. Julkunen, 2011; Uggerhøj, 2011) and solving problems (Benbasat et al, 1987; Davison et al, 2004) is one of the core elements in the knowledge development in practice research. Carlile (2004) stresses an iterative approach for sharing and assessing each actor's knowledge in terms of three types of boundaries and capacities

for knowledge to pass through in order to be understandable and useful: the syntactic, as a common lexicon for transferring; the semantic, common meanings for translating; and the pragmatic, common interests for transferring the domain specific knowledge. Knowledge domain, the body of knowledge to communicate and develop thus demands both rigour in general theoretical results and relevance to be useful in the local practice, i.e. a contribution in a consumable research according to Robey and Markus (1998). Pragmatism in research, i.e. to study actions and their practical consequences (e.g. Benbasat & Zmud, 1999; Agerfalk, 2010) can be reached with a mix of research methods, notions of practice research models (Julkunen, 2011) and theories of work practices (Goldkuhl, 2005) and work systems (Alter, 2006). To be able to study a practice, the notion of operational work will be crucial; in Table 1, the operational¹ view is stressed with identified elements in a local practice from work practice theory (Goldkuhl, 2005) and the work system framework (Alter, 2006).

Table 1: A local practice as a work practice and a work system.

| Work practice (Goldkuhl, 2005) | Work system (Alter, 2006) |
|---|--|
| Action: performance to produce result initiated and governed by requests or assignments | Activities and processes: produce products and services |
| Actor: someone who demands/initiates/ provides input, performs actions and receives/ uses/consumes output | People: receive/use/benefit directly from products and services or perform the work |
| Information: trigger (the joint need/interest/ actor related purpose), input (prerequisite to actions), output (a sub result or a result from actions/process) | Information: used or produced by the work system |
| Result: produced in action and the value of something (material or immaterial) that is relevant and useful | Products and services: produced by activities and processes |
| Technologies: mediate or assisting actors during performance or are the performers | Technologies: used to perform work |
| Knowledge: actors possess for continual learning to prepare, perform and evaluate actions (explicit/tacit) | Knowledge: special case of information; recorded in documents, images, rules or in peoples' heads |
| Resources: human, information and technical that are shared, a base/pre-products for and used in actions | Infrastructure: human, information and technical resources |

¹ In work practice theory and the work system framework, management elements such as strategies and environment (Alter, 2006) and organisations' internal memory, norms and rules (Goldkuhl, 2005) describe local practices as organisations.

Table 2: Components in practice research foundation.

| Components | Characteristics and our chosen concepts |
|--|---|
| Relation (e.g. Benbasat et al, 1987; Avison et al, 1999; Baskerville & Myers, 2004) | <ul style="list-style-type: none"> • Inform, help, collaborate in data collection and co-producing results |
| Motives (Nordström & Axelsson, 2011) | <ul style="list-style-type: none"> • Researcher understand the domain, produce useful knowledge and ensure practical relevance in research • Practitioner increases competence, is a part of a social community, solves specific problems and influences the research |
| Knowledge domain (e.g. Benbasat et al, 1987; Avison et al, 1999; Baskerville & Myers, 2004; Davison et al, 2004; Julkunen 2011; Uggerhøj, 2011) | <ul style="list-style-type: none"> • Practical needs, relevant problems, matters to solve and improvements to make • Explicit or implicit tacit elements • A shared body of knowledge to communicate and the link between researcher and practitioners |
| Local work practice (Goldkuhl, 2005; Alter, 2006) | <ul style="list-style-type: none"> • Stakeholders/Customers (in research and practice), Action, Actor/Role (possess knowledge and motives), Information, Contributions (results), Technologies (resources) |
| Knowledge development (Goldkuhl, 2011; Benbasat et al, 1987; Avison et al, 1999; Baskerville & Myers, 2004; Christiansson, 2011) | <ul style="list-style-type: none"> • Knowledge emerges directly from local practices • Knowledge emerges from what practitioners do • Knowledge emerges from what practitioners say they do and what is going on |
| Research methods (Goldkuhl 2008; 2011; Mathiassen 2002; Benbasat et al, 1987; Avison et al, 1999; Baskerville & Myers, 2004; Davison et al, 2004; Christiansson, 2011) | <ul style="list-style-type: none"> • Situational inquiry by a close (internal) and in-depth study of work practices with e.g. problem diagnosis, experimentations, practice observations, interventions, reflective learning and so on • Research-practitioner collaboration and co-production • Research interventions consist of concept development, email conversations, supervised sessions, workshops, modelling, mentoring in harmony with the on-going knowledge development within the local practice |
| Contributions (Goldkuhl 2008; 2011) | <ul style="list-style-type: none"> • Researcher and practitioners give something/solve something/contribute to changes in return to the local practice • Researcher produces and contributes to general knowledge for use in general practices • Researcher produces and contributes to general knowledge as part of the scientific body of knowledge |

To summarise, our point of departure using a practice research foundation can be described in terms of solving a relevant problem with influences from action research, collaborative practice research and situational inquiry in a local work practice. The

relation between researchers and practitioners is based on different motives in different phases in the research process with the intention to develop a common knowledge with different emphases on development in a knowledge domain, using a mix of research methods to contribute with useful results for the local and general practice as well as the general research community. See Table 2 for chosen components and concepts to describe our practice research foundation.

2.1 The Case Study

A case study is conducted to enable an in-depth study in a particular context (Yin, 2003). Our case study will explore practitioners' use of a BPM maturity assessment model in a local practice. Different stakeholders trigger and expect results from the case study. In the case study, we aim towards good research '*for me, for us, and for them*', using words from Reason & Marshall (1987). Further, there are multiple roles in the work practice (cf. first-, second- and third-person inquiry according to Reason & Torbert, 2001) due to the multiple contexts: the company in the study (the local practice) and the university course (the general practice), which are related, and which are in interaction with each other in the knowledge transfer and co-produced knowledge development.

Motives for the practice research from the company view included a *need of a BPM maturity assessment model* as the BPM initiatives are costly (in terms of time and money) and assessment results can work as a practical roadmap to improve areas where the organisation is not achieving their goals. Motives from the point of view of the business developer included a *need of knowledge development* and to apply for a new role in the organisation.

The pre-study in the local practice was conducted over 10 days in March 2012 as an assignment in a university course since the business developer at the same time was a course participant in a business development course offered at Karlstad University. Central business process concepts, purpose of and possible effects of process orientation as well as basics in BPM maturity in organisations were covered. One of the course assignments required applying theory in practice, and in this assignment the business developer investigated the potential use of one BPM maturity assessment model. In the role of course participant the *need was to increase theoretical knowledge in BPM maturity assessment and to gain skills in conducting assessment in practice*. The business developer and the researcher, who was also the course teacher, share the common interest in exploring the use of general research results in a local practice as well as a further understanding of the knowledge domain. As several practitioners from different organisations participated in the university course and will benefit from the results of the course assignment, the course is viewed as the general practice in our study. Course participants might be on standby to evaluate BPM maturity in their own organisation, others want to increase their knowledge in BPM maturity assessment models in general and *need a high quality course contribution* to learn from. Karlstad University needs to offer high quality courses and be able to provide relevant course assignments based on questions that arise from practice.

Finally, the general research communities as BPM scholars and practice research scholars are stakeholders to the practice research. Practitioners' use and experiences from a BPM maturity assessment model is *needed to get empirical evidence for BPM implications in practice* and input to further concept theorising and assessment model development. *A need for Practice Research case studies* describing work practices is

needed to obtain empirical evidence for the use of and value of conducting practice research with input to further concept theorising and research method development. Figure 1 shows an overview of stakeholders on an organisational/community level with different triggers to the work practice processes. The legend to read the map is as follows:

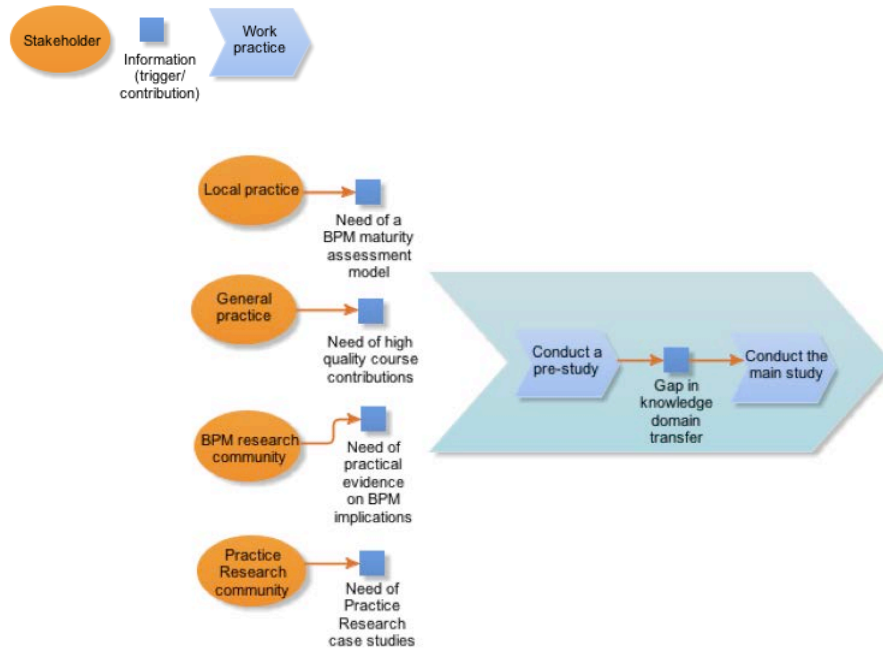


Figure 1: Stakeholders with motives as triggers to the practice research.

Telge AB is *the local practice* in this study and the company is one of 14 companies owned by Södertälje Municipality, with 700 employees. The reason behind choosing Telge AB was based on the fact that during the last three years, the organisation had undergone an organisational shift towards process orientation. The *business developer* (BD) in Telge AB had the opportunity to conduct a theory-based pre-study to find, translate and adjust a BPM maturity assessment model to be useful as an evaluation tool in the local practice. The choice of Telge AB also simplified the feasibility of the study, since the business developer works in the same group of companies.

The business developer made the selection of *respondents* (P) by asking for people in high positions that were heavily involved in BPM work in the company. The criterion was designed to select respondents with a higher than average understanding and with a need for an assessment model and tool. In total, four people were contacted and all agreed to participate in the study. Three of the respondents were chosen from the company, all in leading positions and with three years of practical experience of working with processes, representing the following roles: project manager, head of planning and project management and head of IT and measurement technology. One respondent was chosen from the parent company working as a business architect with 13 years of practical and theoretical experience from working with processes. The joint interest, by the business developer and the *researcher* (R), is to identify and understand the transfer of knowledge domain from a model in theory into

a useful BPM assessment tool in a local practice. In Figure 2, an overview of the main study is modelled and described in a process diagram. The legend to read the process map is as follows:

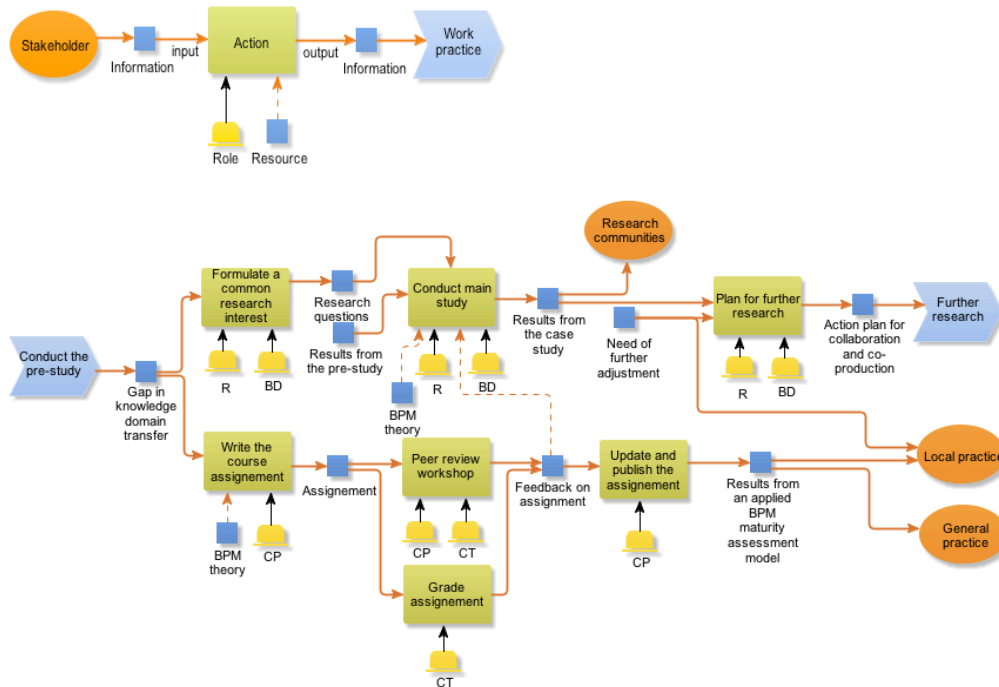


Figure 2: The main study based on findings in the pre-study and the parallel university course.

The gap in the knowledge domain transfer was a result from the pre-study, which triggered the main study. Additionally, the course participant (CP) analysed the result as a part of the university course assignment based on theory and the practical experiences from applying a BPM maturity assessment model. Interventions between the researcher (R) and the business developer (BD) in the local practice as well as the teacher (CT) and the course participant (CP) were conducted via email conversations, in supervised sessions, as well as by written feedback on the assignment and in a peer review workshop with course participants from other organisations in the general practice.

Limitations in the *BPM theory* study are due to the fact that the knowledge domain is extensive and complex. Therefore, we have applied a brief approach for a first orientation in a theory review to get a baseline for discussing knowledge domain transfer as moving knowledge on BPM, captured in a maturity assessment model, to be interpreted and adjusted in use by practitioners. The knowledge transfer in this study is defined as the transfer from one source (a research result) to another (an applied BPM maturity assessment model), i.e. knowledge is transferred (Cook & Brown, 1999). In our study, we are interested in BPM maturity assessment models that are based on practice and are developed for practitioners. Our selections of sources in the literature review are therefore only to be viewed as an example of BPM assessment models rather than a comprehensive study of BPM maturity models.

Results from the pre-study are findings from our first BPM maturity assessment in a local practice and were analysed based on the question: *What can be learned from a local practice using research results in the knowledge domain?* We used the local practice concept defined in the practice research foundation (see Table 1) as an analytical framework together with a business process modelling to identify and reflect on actions and interactions in the case study, since *knowledge development* in our study emerges directly from the practices themselves in relevance to addressing the need of a BPM maturity assessment tool to use in the local practice. Thus, knowledge emerges from what practitioners actually do. Input in the analysis was generated from the four respondents and the researcher with answers and comments on a questionnaire in the conducted assessment survey. The replies from the survey were collected and presented in Excel sheets as a report from the survey. Based on respondents' replies, findings from the theory review and the researcher's experiences and knowledge in the domain, conclusions were drawn and listed as examples on a mismatch in the knowledge domain transfer. Conclusions were based on the fact that the knowledge to be moved from one location to another, i.e. from the assessment model to the practice of using it was not, for some reason, directly working. In our study, we are not coding different categories of gaps, nor prioritising gaps, as this is beyond the scope of this paper. We are exploring gaps.

Based on results in the pre-study a common *research question* was formulated for the main study: *How can the knowledge domain transfer become explicit in a practice research design?*

An overview of the knowledge transfer between stakeholders (local and general practice and general research communities) is conducted in a concept modelling to highlight interactions identified in the process diagrams from the pre-case study. The knowledge transfer loop model can be used to make explicit the relation's contribution of 'a case' in action research and design research. With a practice research approach and a clarified knowledge transfer, the 'case' will enable contributions instead of eclipsing them.

To answer the research question, conclusions from the pre-study were used together with the business process diagram from the local work practice to be structured and highlighted in the snapshot notation by Alter (2006). A work system snapshot is used to describe and allow a reader to quickly identify relevant customers, products/services, work practices, information, technology and participants in business and system performance. Thus, this notation will be useful in highlighting the work practice of our practice research. Terms are used from the practice research foundation (see Table 1) to focus on the work practice in our study. We have used a combination of business process diagrams and the snapshot notation to avoid a vague snapshot description. The aim is to sharpen and make explicit the prerequisites for knowledge domain transfer it is therefore difficult to use the snapshot template without process diagrams. The combination creates an analytic tool to identify what is going on in practice and to highlight this in an overview suitable for persons who do not think in 'boxes and arrows'. Focus can shift between an outlook (top-down) to a detail view bottom-up. Information is given on important topics such as who performs which research activities, what sources are used and what kind of contributions are the results of the research and for whom.

3 BPM Maturity Assessment – in Theory and in Practice

BPM initiatives are increasing in all kinds of organisations. Rosemann & de Bruin (2005) present a maturity model that provides a framework based on *core components* for a detailed evaluation of BPM *capability areas* and achievements within organisations. Each core component (IT, strategic alignment, governance, methods, people, and culture) consists of five *sub-components* with proposed content (see de Bruin et al, 2005; Rosemann & de Bruin, 2005; de Bruin, 2009; Rosemann & vom Brocke, 2010) to measure. Culture is often considered a key element in BPM practice (vom Brocke & Sinnl, 2011). Ganesan (2011) present an assessment model based on seven main components to use with an array of questions to assist practitioners in assessing the state of maturity related to enterprise-wide process modelling. The main components (motivation, governance, architecture definition and modelling, tool administration, library management, stakeholder management and training) are further divided into four or five sub components (totalling 30), each addressing a question in a survey tool. Further, Rohloff (2009) introduces a maturity model based on nine *categories*, which cover aspects that impact BPM success: process portfolio, target setting system, process documentation, process performance controlling, process optimisation, methods and tools, process management organisation, program management, qualification and communication, data management and IT architecture. Moreover, research results from Indulska et al (2009) describe different *challenges* and *issues* in process modelling, such as the value of process modelling, expectations management, model-driven process execution, standardisation, business-IT alignment, process architecture, service orientation, training, model management, buy-in, ease of use and adoption. Additionally, Tregear (2010) suggests a set of *key BPM questions* to guide our thinking, writing, analysis and development activities. Furthermore, zur Muehlen (2008) illustrates *levels of BPM skills* as key factors to adapting the meaning of process orientation, i.e. to understand the concept and main idea with the approach.

The Business Process Maturity Model (BPMM) by OMG (Object Management Group) is launched as a framework based on other models to be used for improvement efforts in an organisation's business processes related to their products and services (OMG, 2012). The five *maturity levels* in BPMM (initial, managed, standardised, predictable and innovating) represent different states through which an organisation is transformed as its processes and capability are improved. Additionally, BPM can be described as a 'process staircase', focusing on BPM actions with different *degrees of process orientation* in organisations (Christiansson, 2001). Steps in the staircase (mapping, establishing, evaluating and improving together with monitoring processes) are based on how solid the grounding is, i.e. pre-conditions in capabilities and ability such as knowledge, leadership engagement and personal mind-set.

Some reflections arise: How are components, capability areas, issues, categories for success, challenges, key questions, key elements, levels of skills, levels of maturity and degree of BPM related and how may they be incorporated in a BPM maturity assessment model? Moreover, the review shows multiple dimensions in the content of BPM maturity assessment models, such as the operative business process, the business process description, as well as organising the process-oriented work as a part in the daily business. Thus, the knowledge domain is complex and the knowledge transfer from theory into practice could be difficult, depending on the practitioners' essen-

tial and basic knowledge in process orientation (e.g. zur Muehlen, 2008) as well as the capability to use research results in an academic manner in the first place.

3.1 To Apply a BPM Maturity Assessment Model

In Figure 3, an overview of the pre-study is modelled and described in a process diagram. The legend to read the process map is as follows:

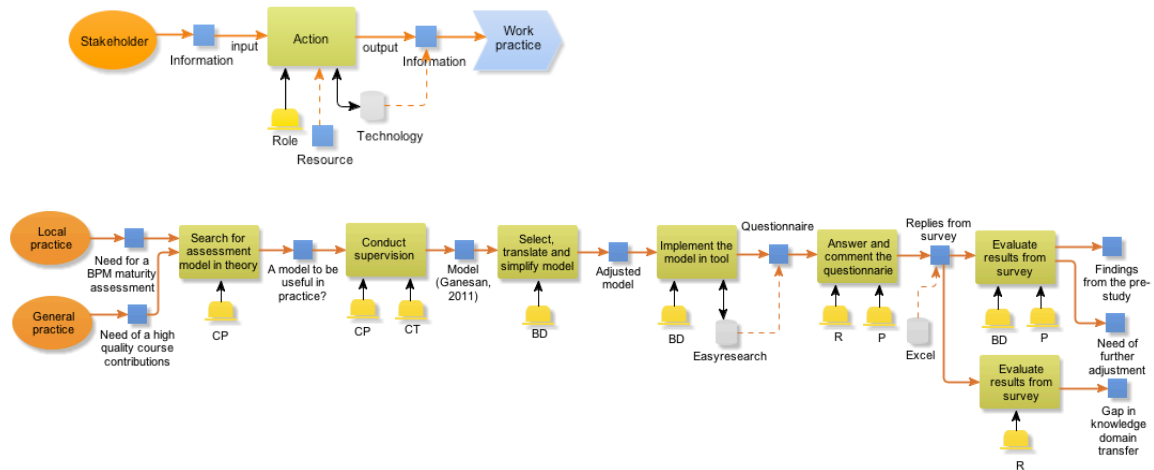


Figure 3: Overview of the work practice in the pre-study.

Based on the need for a BPM maturity assessment in the local practice, the business developer (BD) *searched* for assessment models in theory by different search engines such as Google scholars and databases in the university library. In the literature search, some models were found but none were considered to be working in practice by the business developer. During *supervision*, the course teacher (CT) helped in *finding* some models intended for use in practice and the business developer *selected* the assessment model of BPM maturity from Ganesan (2011) to apply in the local practice. The main reason for choosing this model over other models was that the questionnaire structure was easy to apply and, in theory, should give a result easy to interpret. The business developer could also understand the scope and target area of the model as well as the applicability in the company.

Interactions between the researcher (R) and the business developer (BD) in the local practice as well as between the teacher (CT) and the course participant (CP) in the university course were conducted in email conversations, in supervised sessions and comments on the evaluation questionnaire. As the practitioner will apply theory and use the assessment tool in the local practice, supervised sessions and feedback may lead to changes as well as being a driving force for the researcher in observations and analysis when discussing problems in the work practice at hand.

Actions performed by the business developer (BD) included a *translation* and *simplification* of the assessment model; see Table 3 for an example of the simplification regarding the main component ‘Motivation’ in Ganesan (2011).

Table 3: Example of the simplification of the main component motivation.

| Assessment questions for the main component 'Motivation' | Sub component | Response options (with assessment score in brackets) |
|---|---|---|
| In your own business, the process work is well documented concerning... | Vision? | It does not exist (0), Exist just as an idea within the process modelling team (1), Documented but not clear (2), Documented, clear but not communicated (3) and Documented, clear and socialised (4) |
| | Mission? | |
| | KPIs? | |
| | Service definition? | |
| How important is it to motivate the process modelling initiative to succeed with process modelling? | Relevance (with target score in brackets) | On a scale from 1: not at all important to 5: essential and a target score from 0 to 4. |

The simplification of the model was mainly linguistic but also so that the sub components could be gathered with the same possible responses. For example, in the original model, the main component 'Motivation' and the sub component 'Vision' the question is formed: *"Is the vision of the enterprise process modelling initiative well documented?"* with the following alternatives: 1) No documented vision exists, 2) Exist just as an idea within the process modelling team, 3) Documented vision exists, but not clear, 4) Documented vision exists, clear but not communicated and 5) Documented vision exists, clear and socialised. The simplified model had for all questions within the main component motivation the beginning *"In your own business, the process work is well documented concerning..."* following by the sub components as questions *"Vision?"* *"Mission?"* and so on with the same alternatives for all components: 1) It does not exist, 2) Exist just as an idea within the process modelling team, 3) Documented but not clear, 4) Documented, clear but not communicated and 5) Documented, clear and socialised. The reason for this change was to shorten the survey to get responses quicker and facilitate the participation.

One of the prerequisites for the application of the assessment model is that the practitioners (P) in the company can easily access the questions, understand and answer them. The survey tool Easyresearch was used to implement the assessment model in terms of a questionnaire and used to distribute the questions to the respondents as well as the results to the business developer. To strengthen the study's reliability, the questionnaire was tested. The purpose of testing the questionnaire was to investigate how useful this type of survey would be for the organisation. Parallel to the investigation in practice, the researcher at the university responded to the survey based on expertise and experiences from process-based work and evaluated the issues of intelligibility and coverage in terms of process maturity. The business developer considered the researcher's role to be valuable, since the researcher would have a greater understanding than the other respondents in the domain knowledge and the original model from Ganesan (2011).

The data collected in the survey tool was compiled in Excel. The respondents gathered during a recorded hour in which all of the main components, sub components and questions were open for discussion. See Figure 4 below for an overview of the results that were discussed with the respondents.

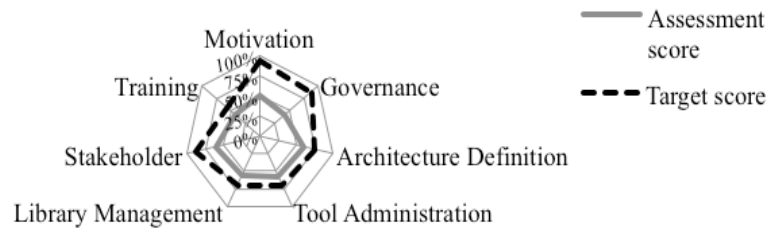


Figure 4: An overview of the results from the assessment.

Also featured was a summary of the results for each question area where the result was "sticking out" and needed to be discussed, see Figure 5 below the specific results for the main component 'Motivation'.

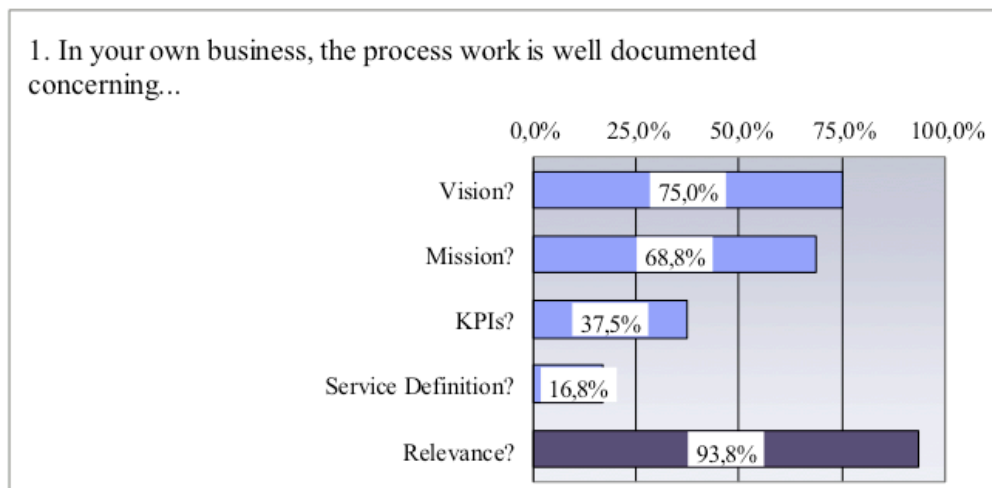


Figure 5: An overview of the results from the main component motivation.

A number of critical objections to the research method can be made. Initially, the translation and simplification of the model from Ganesan (2011) can affect the reliability and credibility of results. Ideally, the original model would have been used, but this was judged to imply a high risk of individual linguistic interpretations and not answers to the survey.

Even though the model was translated and simplified, the survey was unclear for the respondents on several issues. One example is the question related to the component 'Motivation': "Within your own business, has the enterprise process modelling initiative well documented... vision, mission, KPIs (key performance indicators), service definition?" Comments from the researcher were as follows:

- What does "your own business" means - the entire organisation or a department?
- What is the difference between "documented" and "clear" (a comment on the response options)?
- What kind of vision - business or process work?

- What kind of mission - process orientation or process modelling?
- What does the service definition of process work means?

Moreover, what is not clear from the overall result is that there is a large spread between respondents. On questions about the relevance of the main components the respondents agree on only one component out of seven. For questions related to sub components, the respondents agree on only one of 30 questions. When displaying the results as a polar plot, it was clear that the questions needed to be reviewed and simplified to provide relevant results. The main component 'Motivation' was one of the areas where the current situation and the relevance of the area had values with the greatest difference. To find the reason behind the result, one needed to go deeper into the individual questions, specifically the question concerning "service definition" where the present situation was valued at 16.8% compared to the relevance of the overall area experienced by 93.8%. One of the respondents explained how he had understood the question with the following statement: *"The service definitions are that the services that the processes will provide are clear and defined. Thus we have clear and defined services in the company today and how they are linked to different processes internally."*

This particular question had both the respondents in the role of head of planning and project and the head of IT and measurement technology in the company focused around whether there was a catalogue of services on process works that the modelling team could offer. Moreover, the project manager thought the question was about roles; if the process owners were clearly defined among other roles of importance in the process oriented organisation. The researcher considered the latter, but stressed that both perspectives are important in BPM and that the questions need to be clarified to indicate if the focus was on the process work or the business performance.

The answers addressed how relevant each component was perceived and how relevant each area was experienced. All respondents agreed with: *"Training and education is crucial as there should be a higher value. But otherwise I feel that the result is true."* Regarding the model's design itself, all comments were positive about the ease of collecting responses from the questionnaire. However, it would be an advantage if the components' relevance were measured on individual questions rather than on the overall area. The discussion further showed that questions as well as response options should be modified to provide a more relevant response to the company. The respondents in the local practice confirmed that the model could be an important tool in the process work, but first needed some revision and simplification. Examples of desired applications include measuring the effectiveness of the business process, benchmarking between processes and other organisations, finding weaknesses for improvement, enabling evaluation from an "as-is" level with a "to-be" level in operational business as well as BPM.

Conclusions in the course assignment are: in current form, the model is difficult to apply. In order to use the model of Ganesan (2011) in the company, the components must be specified in relation to whether the questions are intended to measure the process orientation, process modelling or the business processes. Further, the model needs more questions related to the establishment of process orientation. The measurements may be needed in several different dimensions and the questions need to be adjusted by selecting the measuring range. After a revision of the model

adjusted for the company, the model could be applied for the assessment of process maturity, measure of efficiency and a basis for comparative studies. The main opinion is that the model must be easier to understand. In particular, there is a need for further investigation, simplification and clarification of questions. Moreover, the scope of the model should be specified, as it is intended to evaluate the process modelling in the organisation, not a comprehensive cover of the BPM.

4 Knowledge Domain Transfer in Practice Research

Stakeholders in this case study are the *local practice* with practitioners in the role of primary actors in the research process; the *business developer*; and in our work practice setting, *respondents* with experience from working with BPM at Telge AB. The *general practice* in our study is the university course setting with practitioners working in other organisations having theoretical and empirical experiences in the knowledge domain. The course participants are viewed as secondary actors in the research process as they do not have any direct influence on the topic of interest, data collection nor analysis. The curved and wider arrows in the figure below illustrate the *researcher* with the key role as a coordinator of the knowledge transfer from the ‘general side’ to the ‘local side’ and vice versa. The prerequisites for the collaboration and relation between the business developer and the researcher are the common interest in the knowledge domain, ability and skills to work in a practitioner-researcher relation and the win-win situation of an effective knowledge production based on findings from the general research community as well as experiences in the general practice. The knowledge transfers in the practice research process are described in detail by business process diagrams (see Figure 2 and Figure 4). Below, in Figure 6, an overview of the knowledge transfer loop in the case study is presented together with a plan for further research in a forthcoming study. The knowledge domain transfer loop notation focuses on stakeholders, actors and interactions in practice research with examples from our case study.

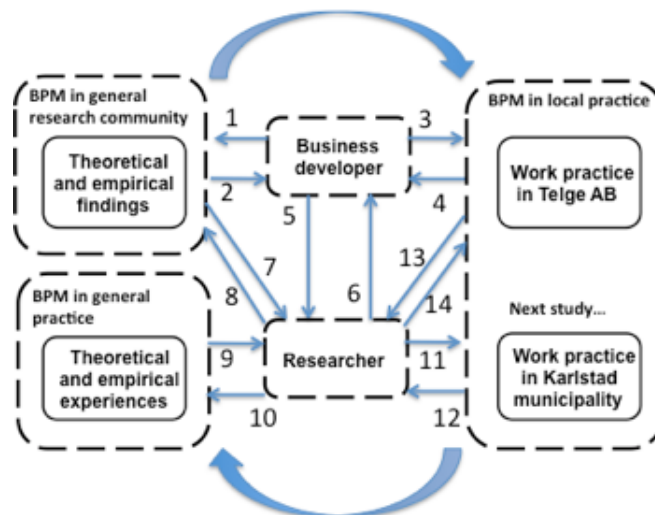


Figure 6: The knowledge domain transfer loop in the practice research.

To describe the knowledge domain transfers in the case study, the actors (dashed rectangle) and interactions with knowledge exchange (arrows) can be described as follows:

1. The business developer needed and searched for a BPM maturity assessment model in theory. It was hard for the business developer to find and access research results. A supervision to find an assessment model was needed.
2. The business developer selected, translated and simplified the assessment model by Ganesan (2011). The business developer needs a certain knowledge level to understand and translate the research results. The assessment model is difficult to apply. The measurements may be needed in several different dimensions and the questions need to be adjusted by selecting the measuring range. Further, the model needs more questions related to the establishment of process orientation. 'The lost in translation effect' illustrated by the respondents with fairly equal BPM knowledge and skills, but who understand and interpret the same question in the assessment model very differently, indicates the need for the researcher to guide the user in how to use the research result.
3. The business developer implemented the adjusted model in a tool and sent it as a questionnaire to practitioners with BPM knowledge, skills and experiences working in the local practice.
4. The practitioners commented on the comprehensibility of the questions they were not sure about (no syntactic transferring) and answered questions with a meaning (semantic translation).
5. The business developer sent the adjusted model as a questionnaire to the researcher with BPM knowledge, skills and experience from the general research community and general practice.
6. The researcher commented on the comprehensibility of the questions according to the domain knowledge and answered the questions based on how they most reasonably could be interpreted.
7. The researcher as the knowledge domain expert (c.f. de Bruin 2009 domain experts), has the potential to have or to gain knowledge required in the knowledge domain to find, use and evaluate a BPM maturity assessment model based on theoretical and empirical findings in the research community. In our brief theory review on BPM maturity and assessment models in this paper, we identified a need for further exploration of the 'BPM maturity concept' to define relations between elements and basis of division (e.g. components, capability areas, issues, categories, challenges, key questions, key elements, levels or degree) in maturity models to support users in interpreting, adjusting and combining models. Further, a practitioner might have difficulties knowing which maturity model (of hundreds) would be appropriate to use and what versions of a model (e.g. several publications describe the development and use of the assessment model) are available. Additionally, the practitioner might have difficulties identifying different dimensions (business processes, business process descriptions and organising a process work practice) and their implications in a BPM maturity assessment model. Prerequisites for a knowledge domain transfer from theory into practice could be

dependant on the practitioners' essential and basic knowledge in process orientation (e.g. zur Muehlen, 2008) as well as the capability to use research results.

8. The researcher analysed, evaluated and produced new knowledge in terms of research contributions in co-production between the business developer and the researcher with a common interest (pragmatic transferring), even though we would like to point out the researcher as the main producer in this case, as deeper knowledge in the domain is crucial to be able to contribute to the general research community.
9. The researcher had the ability to collect theoretical and empirical experiences from a general practice in a certain setting.
10. The researcher had the ability to produce and present theoretical and empirical findings interesting and targeting for a general practice in a certain setting, in this instance, a course assignment.
11. Results in this study are verified from just one case and it is difficult to generalise our findings, which only can be viewed as indications and preliminary. Therefore, we would like to repeat the same pre-study for business developers in Karlstad Municipality. The adjusted model will be sent as a questionnaire to practitioners with BPM knowledge, skills and experiences working in the local practice. Together, further investigation; simplification and clarification of questions related to the scope of the model will deliver a refined and adjusted version of a BPM maturity assessment model.
12. With results from the next study we will be able to identify patterns and deliver more experiences in contributions to the local practice.
13. The second case study will be a further collaboration between Telge AB, Karlstad University and a second local practice in terms of Karlstad Municipality. The researcher has the potential to gain knowledge required in the knowledge domain from two local work practices.
14. The researcher has the ability to analyse, evaluate and produce new knowledge in terms of research contributions produced in collaboration between several local practices with a common interest to contribute to the '*local community*', i.e. a community with several organisation conducting research together, with the same need and in the same way. Each organisation has the opportunity to use the produced results directly in their own local practice. The researcher also has the opportunity to produce contributions to general practice and the general research community.

We have in our study identified some challenges for a successful knowledge domain transfer regarding practitioners' possibilities of using the BPM maturity assessment model. Knowledge about where to find and access the model implicates an increase in the prerequisites for knowledge transfer by forms of *publishing* and *packaging* the assessment model. To transfer the most recent findings in the knowledge transfer it is also important for a practitioner to know what version of the model is being used (if e.g., several publications describe the development and use of the assessment model). However, the challenges for the practitioner to find the right *version* and the appropriate BPM maturity assessment model still apply. Furthermore, the practitioner

needs a certain knowledge level or years of experiences, as a pre-condition to translate the research results, i.e. *recommendations and implications for the use* of an assessment model should be explicit. Ganesan (2011) expresses that the assessment model covers enterprise-wide business process modelling but the business developer and the responded practitioners all interpreted it as a comprehensive model for all issues in BPM maturity. The question that arose in the model and in the translation also indicated that the question could be interpreted in many different ways. Thus, the *form of model description* might include illustrations to frame the scope of BPM maturity in relation to text and questions. Different practitioners with fairly equal BPM knowledge and skills understand and interpret the same question in the assessment model very differently. The knowledge domain transfer might increase with a *'practitioner guide'* in order to make explicit the model in hand in *relation to other BPM maturity assessment models* (based on the general research community) and questions in relation to *basis of division, elements/areas* together with *dimensions* covered.

In Table 4, we illustrate the use of a practice research snapshot (c.f. Alter, 2006) as a notation to cover the context in the practice research design. All aspects covered in the snapshot are important for success of knowledge transfer in the research process, though some are primarily for the knowledge domain transfers and are marked (bold). At this stage, the practice research design snapshot is an example of a practice research design in one case study.

Table 4: A snapshot of the practice research design in the case study.

| Stakeholders | Contributions |
|---|--|
| Local practice: <ul style="list-style-type: none"> • The Company AB (the target practice) General practice: <ul style="list-style-type: none"> • Practitioners from different organisations in the university course General research community: <ul style="list-style-type: none"> • BPM scholars • Practice Research scholars | <ul style="list-style-type: none"> • Findings and experiences from applying a BPM maturity assessment model • An action plan for refinement and further adjustment on the assessment model in further collaboration with Karlstad University and Karlstad Municipality • A course assignment with learning outcomes • An example on applied BPM maturity assessment model • An example on applied BPM maturity assessment model • Identified complexity in the BPM maturity concept • Challenges in the BPM knowledge transfer • A defined practice research foundation • Identified complexity in the practice research concept • A model driven approach with notations to make explicit the knowledge transfer |

| Local work practice | |
|--|--|
| Perform a situational inquiry in the local practice: <ul style="list-style-type: none"> • Conduct a pre-study on the use of research results (a BPM maturity assessment model) Theorising to contribute to the general practice and research communities: <ul style="list-style-type: none"> • Define complexity in the BPM maturity assessment concept • Define the foundation in practice research design • Model knowledge domain transfers in explicit notations | |
| Action | Information |
| <ul style="list-style-type: none"> • Formulate a common research interest • Search for assessment model in theory • Select an assessment model • Translate and simplify the model • Conduct supervision • Implement the model in a tool • Evaluate results from survey • And so on... | <ul style="list-style-type: none"> • A need of a BPM maturity assessment • Feedback on (course) assignment • An assessment model in theory • A questionnaire • Replies from survey • Need of further adjustment • Gap in the knowledge transfer • Research question • And so on... |
| Actor/Role (relation and motives) | Technologies |
| <p>Business developer:</p> <ul style="list-style-type: none"> • Expert in local knowledge and situation • To conduct a theory based study to create an evaluation tool for the local practice <p>Respondents:</p> <ul style="list-style-type: none"> • Domain knowledge based on local experiences <p>Researcher:</p> <ul style="list-style-type: none"> • Domain knowledge based on general research • To study BPM practitioner's ability to use general results in the knowledge domain <p>Course teacher:</p> <ul style="list-style-type: none"> • To gain high quality in course assignments and relevant knowledge development by questions that arise from practice <p>Course participator:</p> <ul style="list-style-type: none"> • Increase knowledge in BPM maturity and skills in assessment | <ul style="list-style-type: none"> • Search engines and databases for published research results • Easyresearch - an online survey tool for web based data collection, analysis and reporting • Data compiled and presented in Excel |

To summarise our findings, the case study indicates a need to highlight interactions between stakeholders and actors in a practice research design to make explicit the knowledge domain transfers. In our work, we used a model driven approach to describe the case study and to be able to communicate the case as an example of practice research. Process modelling and concept modelling were used as techniques. Findings from this 'exercise' are that modelling is an appropriate way to plan, design, present and analyse the research to make explicit the prerequisites for and implications of the knowledge domain transfers. The three different notations we have used give different views, are inter-linked and have showed to be useful to combine. By using a *process description*, more detailed descriptions of actions and interactions

between roles, information and technologies can be captured in the research process and be added as content in a snapshot to define the practice research design. A *practice research snapshot*, see our example above, is a structured description in text to be used for pinpointing the work practice and the specific context and expected contributions to various organisations. Furthermore, the notation of the *knowledge domain transfer loop* can be used to identify the stakeholders and their interactions on a high-level basis as a starting point for the use of the other notations or vice versa. In sum, all notations are based in the foundation of practice research and thus will help to make explicit the knowledge domain transfers: the interaction between actors in different roles in a certain work practice context.

5 Conclusions

The paper explores *how the knowledge domain transfer can become explicit in a practice research design*.

In the paper, we briefly discuss the knowledge domain and its complexity in order to establish a baseline for our study. We posit that there is a general conclusion to be drawn, that research results are complex for practitioners. In our case, it is complex for the domain expert as well. Thus, we suggest further research and exploration on the ‘BPM maturity concept’ to define relations between elements and basis of division (e.g. components, capability areas, issues, categories, challenges, key questions, key elements, levels or degree) to support users in interpreting, adjusting and combining BPM maturity assessment models.

We have in our study identified some challenges for a successful knowledge domain transfer regarding practitioners’ possibilities for using the BPM maturity assessment model. We suggest focusing on and improving the communication in the assessment model or support the user with the following features to increase possibilities for a successful knowledge domain transfer: the method of publishing, channel choices and packaging, defined version, recommendations and implications for use, form of model description and a ‘practitioner guide’ to make explicit the model in hand in relation to other BPM maturity assessment models. Additionally, recommended questions should be explicitly described in relation to basis of division, elements/areas together with dimensions covered. Guidance to practitioners can be described in terms of a more ‘practice oriented’ packaging of the assessment model and its content, e.g. a description of actions to be handled and/or deliverables when practitioners deal with BPM challenges in organisations as well as prerequisites in capabilities according to the domain knowledge.

In a practice research design, *the knowledge domain* should thus be highlighted for discussions on how knowledge domain transfers could best be conducted in the research process. Moreover, we suggest a model driven practice research design. Modelling and use of business process diagrams, the knowledge domain transfer loop and a practice research snapshot are appropriate ways to plan, design, present and analyse research to make explicit the prerequisites for and implications of the knowledge domain transfer.

In a practice research design, *the interactions between roles and the exchanges* should thus be highlighted for discussions on how the knowledge domain transfers could best be conducted in the research process. Finally, the practice research snapshot covers the context scope, content and contributions. The latter is notable in prac-

tice research design, i.e. to be able to deliver multiple contributions for multiple stakeholders and actors. Our secondary results (not corresponding directly to our research question) are explicit stated in the snapshot as:

- Findings and experiences from applying a BPM maturity assessment model.
- An action plan for refinement and further adjustment on the assessment model in collaboration between Telge AB, Karlstad University and Karlstad Municipality.
- A course assignment with learning outcomes.
- An example of applied BPM maturity assessment model.
- A case study as an example of practice research.
- Identified complexity in the BPM maturity concept.
- Identified challenges in the BPM knowledge transfer.
- Identified complexity in the practice research concept.
- A defined and used practice research foundation.

Indications from our case study suggest further research on concepts in the practice research foundation: contributions (primary and secondary), actors with dual roles, dual work practices (the pre-study and the university course as well as multiple local practices) drive the same and different motives with the research. We suggest a further exploration of the ‘contribution’ and the ‘role’ concept as well as the ‘multiple work practices’ to state possible implications for the practice research design.

Our work has limitations. This paper reports on practitioners’ use of one BPM maturity assessment model found in theory in the context of only one company and only four practitioners. The results from the pre-study may not transfer to other organisations, i.e. the contribution to the general practice might be vague. The business developer had less experience in process work (some knowledge in theory) to support finding, translating and adjusting the assessment model in relation to the practitioners with more experience of working with processes to give the feedback on the use of the BPM maturity assessment model. Future work will examine possible impacts from e.g. respondents’ years of experiences in process work when evaluate and use an assessment model.

A more detailed modelling of the research process could be useful for even better transference of our example of practice research design as well as the potential in a business process diagram. However, with the scope of our paper we have been able to state our points and argumentation on the conducted modelling. On the other hand, the connections between the elements in and between our suggested notations to support its use are missing in our study as it is beyond the cope of this paper. We suggest further research in this direction, i.e. to explore the connections between and the use of process modelling together with the knowledge domain transfer loop and practice research snapshot. Our conclusion is that a model driven practice research design will sharpen the knowledge domain transfer.

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