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Methodology Pursuit for Complex KM Project: Applying Structured-Case with Action Interventions

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Abstract

Complex qualitative research projects often require not only adjustments during project implementation, but also adaptation of the methodology and research design. The paper discusses the enhancement of the structured-case approach to include action research style interventions within structured-case cycles. An application of this approach is presented based on a study of a Community of Practice (CoP) in the information systems domain conducted in four research cycles over several years. The major benefits of the evolved method include the flexibility of the resulting research process, and the capacity to capture diverse project outcomes, at the same time making theory building more transparent

Keywords

Complex project, action research, structured case, theory building.

INTRODUCTION

Addressing complex technological projects and related organisational change in a way where the major steps of change are defined and planned in advance are known to be problematic (Orlikowski & Hofman 1997). Dynamic and emerging organisational patterns require adequate methods to reflect innovation, learning and improvisation as they evolve (Orlikowski 2000). The same applies to complex research projects. Unanticipated changes and new opportunities may affect not only project implementation and outcomes, but project methodology and design for individual project stages. The other dilemma often met by researchers in the IS domain, is that established methodologies might not meet the requirements of a specific project. In this situation researcher is faced with two possibilities: first, to adjust the project to the requirements and assumptions of the most suitable methodological approach; second, to develop a new approach, adjusting and combining established methodological approaches, and to tailor the blended approach to the needs of the project.

This paper discusses recent developments in the second approach. Specifically, the application of the structured-case (SC) approach (Carroll 2000; Carroll & Swatman 2000) enhanced by action research (AR) interventions as part of a larger program of research undertaken in a SC mode is presented.

For the study described in this paper, a methodology was required that would support a qualitative study with complex research agenda, involving several cycles of action interventions and theory building over an extended period of time (in the present study amounting to several years). Denzin and Lincoln (2005) compare qualitative research design process to *quilt making*, or *montage*, where the researcher invents or pieces together new tools and techniques as she finds needed, and deploys strategies, empirical materials, and methods at hand. For the present study the need was identified for the combination of methodological practices and perspectives that would help in-depth understanding of the phenomenon in question, at the same time providing a research strategy that adds rigor, richness and depth to the inquiry (Denzin & Lincoln 2005).

The candidate methods chosen for this study were action research (AR) (Baskerville & Wood-Harper 1996; Blum 1955), and the structured-case approach (SC) (Carroll 2000; Carroll & Swatman 2000). Following considerations on project requirements and appropriate alternatives, it was decided to extend SC to include interventions involving participant/participatory observation and evaluation of the organisational impact to obtain rich data and develop, deepen, and test theory in a cyclical approach. In the present paper, a study is outlined that applies such an approach. This integrated methodology was found particularly suitable for a project with a complex agenda, conducted over a lengthy period of time, and seeking both organisational change and rich theory building.

Specifically, this paper reports methodological findings from a project that combined SC and AR interventions to develop a multi-faceted framework of organisational knowledge management (KM). The paper is structured as follows: The study context section sets the research context and describes the problem situation in terms of the requirements that were placed upon the selection of an appropriate methodology. Subsequent sections provide an introduction to AR and SC, and report on bringing together the elements of these two methodologies in a coherent research program. The application section describes the process of analysis and theory building that was conducted over four cycles of research. The conclusions section provides a brief discussion of the perceived advantages and limitations of the process employed and summarises the paper's contribution to research practice.

STUDY CONTEXT

The research described in this paper is based on a recently completed project that sought to build a multi-faceted framework for organisational KM involving a Community of Practice (CoP) as the core group to be studied, and other entities of the wider organisation in which the CoP existed, as well as interdependencies between the two parties.

The program of research involved investigation of the role of a CoP in organisational KM and was conceived as a "bottom-up" study. The CoP was a group of academics, teaching systems implementation subjects in the School of Information Systems at an Australian university. Specifically, the research sought to understand the role a CoP might play in collaborative KM and knowledge strategy development.

Extant research has acknowledged that CoPs might be viewed as a bottom-up approach to KM, and that such approaches need to be coordinated with top-down KM efforts (Wenger et al. 2002, p. 169). The present study aimed to provide insights into how these two approaches might be implemented as part of a coherent, comprehensive KM strategy, an approach that integrates top-down KM (strategic and mandated by Management), and bottom-up KM (work practice oriented and owned by a CoP at lower hierarchical levels).

The research agenda included exploration of complex and interlacing considerations of the social aspects that facilitate a CoP, the nature of knowledge work and knowledge work support, both technical and non-technical, and knowledge flows between a CoP and the wider organisation. The research also included organisational elements of management and leadership style, strategic alignment, and disciplinary and organisational boundary conflicts. Importantly, a bottom-up approach was taken to investigate KM, focusing primarily on inputs from staff at lower hierarchical levels of the organisation.

The initial aim of the present study was predominantly practice-oriented, as the researcher saw the need, and opportunities to improve the situation of the CoP. Further, the fact that the researcher was a member of the organisation under study in the initial stages would allow in-depth insights into the workings of the organisation as well as the elicitation of rich data from CoP members due to an established trust relationship with the research participants. Action research (AR) was initially thought to be the most suitable approach to achieve the above aims.

In the early stages of the project, the need for adjustment of the research methodology was recognised. First, the researcher's role changed, arising from changes in the relationship of the researcher with the organisation. Second, the priorities of the group under study altered because of organisational changes. Third, an opportunity emerged for conducting observations over a longer period of time and for developing the project to a more complex research agenda. Consequently, the primary goal shifted from introducing organisational change to generating knowledge and organisational learning, so promoting theory building as the primary purpose of the study, whilst introducing only limited organisational change.

This shift in priorities created the need for a research methodology which combines two forms of research activity in an iterative process. The first form involving AR interventions, focused primarily on problem solving, with a secondary focus on the generation of knowledge (Gaventa & Cornwall 2001). The second form involved cycles of interpretive case study with a focus on theory development, drawing upon field data. This second form seeks to develop deeper understanding of the systematic aspects of knowledge work conducted by the group. Both forms were supposed to inform each other within a single research design, enriching a series of conceptual

frameworks. A further requirement of the adopted methodology was that it should facilitate the extraction of theory from masses of field data and broad research themes (Carroll & Swatman 2000).

In response to the project requirements described above, the candidate methods considered for this study were action research (AR) (Baskerville 1999; Baskerville & Wood-Harper 1998; Blum 1955; McKay & Marshall 2001), and the structured-case approach (Carroll 2000; Carroll & Swatman 2000). It was decided that these project requirements can be accommodated within the SC approach, which already involves elements of the AR process, and which allows selection of any research processes, tools and techniques for theory building (Carroll & Swatman 2000). AR interventions were added to address the practical requirements of the research agenda. It should be noted, that another hybrid method, which might be considered for this type of research is Action Case (AC) (Vidgen & Braa 1997). AC combines soft case study and AR as a means of addressing the need to balance intervention and interpretation. AC is most effective for projects with short to medium duration, deliberate small-scale interventions, and focus on mini-case type learning. Action Case (Vidgen & Braa 1997) was evaluated as an alternative method, but was found less applicable for the long term research project, with its complex agenda, and strong focus on a transparent presentation of theory building throughout the project.

STRUCTURED-CASE WITH ACTION INTERVENTIONS

In the following sections the elements of SC and AR will be discussed in terms of their contribution to the overarching research program that is subsequently discussed.

Structured-case (SC)

The purpose of SC is *to assist IS researchers to undertake and assess theory building research within the interpretive paradigm*, (Carroll & Swatman 2000). SC provides a consistent methodological framework, which enables researchers navigating through a potentially messy qualitative research process, and at the same time adequately documenting the theory building process (Carroll 2000). Its basis is the case, in the sense of what is being studied. 'Structured' refers to the formal process model, and consists of three elements. The first element is a conceptual framework representing the researcher's aims. SC suggests that the research subject matter (Carroll 2000) can be based on either an assumption that concepts will emerge purely from large amounts of data collected, with little predefined structure, as advocated in grounded theory (Glaser 1992; Strauss & Corbin 1998), or from preconceived notions and a conceptual structure that can underpin the research, based on available, but possibly scarce resources (Orlikowski & Baroudi 1991). Second, a pre-defined research cycle guides data collection, analysis and interpretation. Finally, literature-based scrutiny compares and contrasts the outcomes of the research process with a broad range of literature to support or challenge the theory built (Carroll & Swatman 2000).

In SC, a multi-staged process approach helps the researcher to organise data collection and analysis (Carroll 2000), providing a pre-defined structure for the conduct of research and development of theory. The SC research cycle includes stages of planning, data collection, analysis, and reflection (see Figure 1). The important characteristic of this methodological approach is its non-prescriptive nature and capability for adjusting research process. At each stage the researcher employs and tailors tools and methods according to the project needs, the appropriateness for the current research cycle, and particular qualities of the phenomena under study.

The development of the conceptual framework is conducted through a series of research cycles. Each of the cycles informs and extends the previous cycle, refining the conceptual framework to a point of saturation, which is determined by the researcher. The reflective stages as part of the cyclic approach also support a process of abstraction. The project outcomes include final conceptual framework as a representation of theory built through the study and associated knowledge.

Action Research (AR)

AR has been defined as *"a cognitive process that depends on social interaction between the observers and those in their surroundings"* (Baskerville & Wood-Harper 1998, p. 92). What distinguishes AR from other methodologies is that it involves practical problem solving which has a theoretical relevance (Mumford 2001). If applied in organisational development, AR aims at improving the human organisation, including the development of the social conditions of the organisation. AR as used in systems design seeks to create or modify organisational systems. If undertaken with the educational goal of creating scientific knowledge, AR attempts to produce a generalisable understanding that practitioners can use in different settings or that other researchers build upon in subsequent studies.

AR is conducted in cycles of interventions, where outcomes examined in one cycle are the input to the next cycle, with the intent to change the situation. The researcher is heavily involved in the organisational life of the research subjects and might even be a colleague of the research subjects.

Essentially AR consists of two major stages (see Figure 2): a diagnostic stage where a social situation is collaboratively analysed; and a therapeutic stage involving collaborative change experiments where changes are introduced and the effects studied (Blum 1955). These two stages are implemented in a cyclic process, linking theory and practice (Baskerville & Wood-Harper 1996).

To ensure that both the problem solving and research interests are addressed, a parallel dual cycle process that also addresses the research interest has to be followed (McKay & Marshall 2001). Eden & Huxham (1995) suggest that this should take place via a comprehensive AR design that involves a continuous writing process to inform theory exploration and implicit pre-understanding

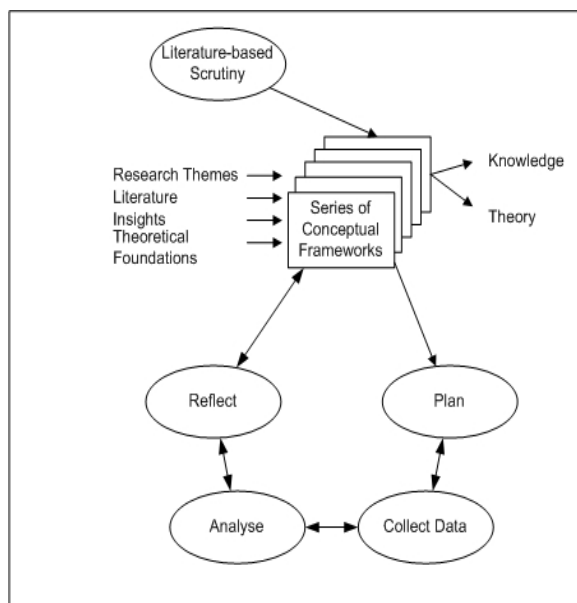


Figure 1 - The structured-case research cycle (Carroll & Swatman 2000)

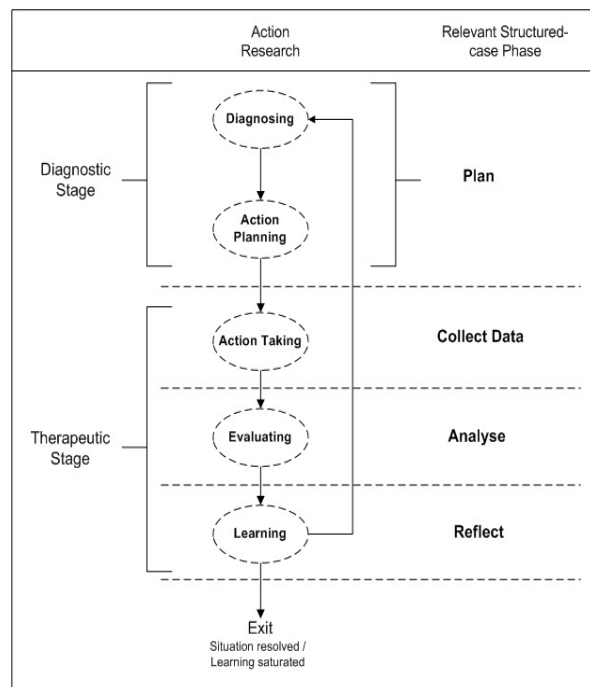


Figure 2 - The Action Research cycle, adapted from Baskerville & Wood-Harper (1996, 1998), Blum (1955)

Research Program: Structured-case with Action Interventions

As reported above, a project sought to address both theoretical requirements and practical goals, including responsiveness to research participants' needs via action interventions, and theory building over an extended period of time. In the present study the SC approach was adapted to include AR style interventions within three of four research cycles. As such, practice-oriented change took place, but within a SC framework that facilitated the emergence of theoretical insights. One research cycle, undertaken in the course of this research, did not include action in the form of an intervention with the aim to introduce change, but took a more conventional case study approach, to investigate the theoretical linkage of the CoP's practice with the formal organisation. Figure 3 depicts the modified research cycle including action interventions, encompassing a synthesis of the process and essence of SC and AR.

The following sections describe each stage in the research approach depicted in Figure 3, in the context of SC, action interventions, and application in the present study.

Plan

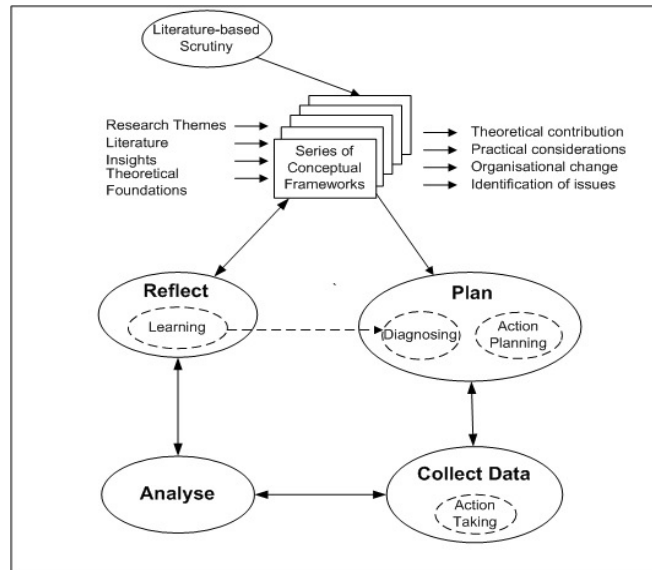
Both SC and AR cycles involve a planning phase. In SC the planning stage includes formulation of the research themes extracted through theory examination and data collection planning, including considerations of data

collection requirements, data analysis techniques (Yin 1994), as well as selection of the research site and participants.

AR starts with a diagnosing phase involving considerations of practical requirements, such as identifying primary problems as the underlying causes for the organisation's desire to change (Baskerville 1999). In AR the planning phase is primarily concerned with action or intervention planning to relieve or improve primary problems identified in the diagnosing phase. Action is planned through guidance of the theoretical framework indicating the desired future state and changes that would achieve such a state (Baskerville 1999).

In the present study, the AR diagnosing stage was integrated into the SC planning phase to address the requirements and issues encountered by the research subjects, setting a practical objective for each research cycle. Then literature considered relevant for the diagnosed problem situation was analysed and used as a basis for developing theory oriented interview questions. Data collection planning involved primarily the design of interview schedules. For cycles with action interventions, workshop agendas were agreed with participants.

Because not all cycles of research need to include action interventions, the integration of the diagnosing and action planning stages is optional and presents a sub-structure to the overall SC cycle structure. While logically intertwined, the practical and theoretical components of the planning phase are, therefore, clearly separated in the presentation of action and theory input.



**Figure 3 - The structured-case research approach including elements from AR
 Adapted from Carroll (2000) and Baskerville**

Collect Data

In AR, data collection is undertaken in an 'Action Taking' phase involving primarily notes from participant or participatory observation (Jorgensen 1989; Kemmis & McTaggart 2000). This 'data collection in action' approach has exposed AR to criticism as consulting exercises masquerading as research and hence as lacking rigor (Baskerville & Wood-Harper 1996).

In SC, data collection is guided by the plan devised in the planning stage. By adhering to the SC cycle structure, the focus on theory is continually revisited throughout the stages of the cycle. Data collection and analysis may be overlapping, as immediate analysis of field notes containing the researcher's interpretations may open up new areas of exploration (Carroll 2000). The data collection process, therefore, involves adjustments responding to opportunities, unexpected outcomes, and emergent themes (Carroll 2000).

Where AR style interventions were conducted, the action taking phase involved implementation of the planned action in the form of workshops. Further, interview schedules were designed to contain questions that reflect participants' impressions of the intervention sessions, relating those with concepts identified in the theory examination stage. While all workshop participants were asked the same questions in the same order, the questions were designed to allow the interviewee to describe specific situations as examples. Adjustments in the data collection phase involved addition and refinement of interview questions in-between interviews of participants.

The collection of data in two formats (workshops and interviews) enabled a separation of the practical and theoretical focus. Workshops were conducted in a semi-structured manner with sufficient flexibility to address the practical problem diagnosed. Further this fluid style of action taking is conducive to generating emergent themes, such as participants raising issues that might not be directly related to the problem addressed in this cycle, but of interest to the researcher in subsequent research cycles or to enrich the understanding of complex situations when presenting an account. The interview format enforced a stronger theory orientation and provided participants with an opportunity of deep reflection, both on the practical situation and in relation to theoretical concepts that were integrated into the interview questions.

Analyse

Analysis involves an iterative process of reading and re-reading vast amounts of raw data typical of qualitative research, developing a deep understanding and relating the data to the conceptual framework (Carroll 2000). Techniques involve coding related to research themes from the conceptual framework and the identification of new concepts based on themes emerging in the course of analysis.

In the present study, data was analysed in iterations. First, the coding of data based on concepts identified in the literature and the evolving framework; Second, identification of new concepts through a process of writing up interview summaries and extraction of concepts that the research identifies as new. Third, a microanalysis was undertaken examining the underlying meaning of the text and to extract more concepts. Fourth, concepts were inter-linked into higher level categories.

While both SC and AR involve a data analysis or evaluation stage, SC advocates this stage as a central element of the research, acknowledging that analysis is undertaken in a non-linear fashion and may occur throughout the various stages of one or multiple SC cycles (Carroll 2000). For example, in the present study the researchers returned to transcripts of earlier cycles to reanalyse data in the context of the current cycle or to identify concepts and issues that span cycles, so informing the emerging theory on a higher level. This assists in the development of a coherent framework that addresses issues from a diverse set of angles.

Reflect

Both SC and AR include a reflection stage in their research cycle structure. In SC, deliberate reflection and critical analysis of any interpretations is a formal stage of the research process, derived from AR (Carroll 2000). In AR, reflection involves an evaluation step to assess practical and theoretical outcomes and to critically consider influences of the intervention on the outcomes (Baskerville 1999). Reflection in AR also includes the formulation of learning, where new knowledge gained during the intervention flows into the organisation or alternatively triggers a new cycle where the outcomes are considered unsuccessful or new issues are identified (Baskerville 1999).

In integrating action interventions in structured case cycles, it is essential that also the learning stage from AR is integrated. In the present study, the learning stage assisted in identifying new issues that were addressed in subsequent research cycles, so creating a 'practical' double loop, in parallel to the theory focussed SC loop, that feeds directly into the diagnosing stage of the planning phase in a new cycle of research.

The reflection phase focuses on theory building based on the understanding of theory as a system of inter-connected ideas that condense and organise knowledge (Neuman 2006, p. 30). Theorising involves relating the findings to outcomes of previous research cycles, revisiting literature (Carroll 2000), or returning to informants to confirm tentative interpretations (Trauth 1997). The reflection stage entails iteration between data (current and previous cycles), the tentative findings, and the inputs to the conceptual framework and recording of the rationale for changing the conceptual framework (Carroll 2000). Outcomes of reflection include challenge and support of the conceptual framework, or revision and update, based on the findings of the current research cycle. The result is an extended conceptual framework incorporating new concepts and/or refined existing concepts.

In summary, the enhancement of SC with action interventions strengthens the evolving conceptual framework through the parallel presentation of the theoretical contribution and immediate testing of the framework through practical considerations, organisational change, and potential identification of issues, which in turn may trigger the next AR intervention.

APPLYING STRUCTURED-CASE WITH ACTION INTERVENTIONS TO KM RESEARCH

As discussed above, the research approach taken in the present study sought to link the SC concepts of SC with the AR notion of diagnostic and therapeutic stages. Specifically, the research adopted the SC method with action interventions and was conducted in four cycles (see Table 1). Each SC cycle typically consists of stages of planning, data collection, analysis, and reflection. Some of these phases were broken down further to address elements of AR, including diagnosing in the planning phase, action taking in the data collection phase and learning as part of the reflection phase. As required for SC, the findings were captured in an evolving conceptual framework (CF1 – CF4), visually representing the theory being built.

Action interventions were undertaken as a series of group workshops involving the CoP and selected members of the wider organisation. These interventions were followed up in reflective interviews. The series of interventions took an evolving nature following the needs of the group as extracted in the analysis phase at the end of each

research cycle. Theory building followed the set theme of bottom-up KM influences observed in the interaction of the CoP with the wider organisation.

The combination of SC with action interventions provided an opportunity to facilitate change and to undertake the research and theory building. This mixed method removed some of the rigidity associated with single methodologies and hence allowed for flexibility. For example, in the present study one cycle did not involve any action intervention (CF2), and a follow-up investigation of change was only undertaken in one of the four research cycles (CF3). As such, the four cycles would not have formally met the requirements of an AR project.

As an example, to assist readers in understanding Table 1, a brief description of research cycle one is provided as follows. Research cycle one involved an action intervention that aimed at declaring a group as a CoP. As such, the *planning phase* started with a *diagnosis* that the group required a focused environment to exchange information on their work related projects, identify common interests, that individuals understand the concept of CoP and identify themselves as CoP members. To underpin this practical goal, relevant *theory* on CoP characteristics was examined. Finally, in *action planning* a workshop was planned to address the practical goals and a follow-up interview schedule was designed to bring together reflections on the workshop in conjunction with the theory examined. The *data collection* phase involved *action* in the form of a workshop, where CoP members presented their work and engaged in conversations on each other's work. Data collection *methods* included workshop observations that were logged by the researcher and reflective interviews with individuals. Following transcription of the interviews, data was *analysed* based on the concepts identified in the theory embedded in the interview schedule as well as issues and themes emerging from the group discussion and individual reflection. In the *reflection* phase the initial diagnosis was revisited and it was *concluded* that the goal had been achieved. As required in SC, components that represent and describe theoretical and emerging *concepts* were captured in the evolving conceptual framework (CF1), including identity of the CoP, perceptions on organisational management, the relationship between the CoP and management, and knowledge work.

The outcome of *reflection* phase for cycle two was the need for deep understanding of knowledge work conducted by the group. Input from the literature was compared with findings based on the field work. *Learning* from reflection on the practical outcomes of the cycle was identified in that the CoP maintains complex and in part problematic relationships with entities of the wider organisation. This was addressed and investigated further in a subsequent research cycle (cycle three).

Table 1 provides an overview of the complete research agenda using the combined SC/AR method. The description of each cycle of this research agenda was structured exactly the same way, so providing consistency of presentation throughout the story. The key to transparency of the research process is the visualisation of the flow from the initial idea or problem situation to the theoretical finding and solution in each cycle and the inter-relationships between the cycles. The overview in Table 1 also clearly shows that for example cycle 2 did not employ an Action Intervention for data collection, but all other structured-case elements were addressed. The presentation of full research project (Koeglreiter 2009) was accompanied by colour-coded graphic representations of the research findings, providing the reader with a series of images visualising the path of theoretical development.

CONCLUSION

The integration of SC and AR as applied in the reported study brought with it a number of benefits.

The major benefits of this approach that emerge include the flexibility of the resulting research process to comprise cycles both with and without action interventions, its capacity to support a study involving many research cycles conducted over an extended time scale (amounting in the study described to several years), and most importantly the capacity of the approach to make visible the theory building that takes place.

First, it served the purpose of developing and testing a conceptual framework in an iterative process. The modified methodology suited the research agenda of theory building by looking at the organisational situation and the research participants through different lenses. From a practical perspective, action interventions aided the improvement of the organisational situation.

Second, with action interventions being optional in the proposed approach, a research cycle that focused on purely theoretical aspects could be included. This can be seen as different to a mixed method approach, as the structure of the presentation of the research process and the development of the conceptual framework was consistent with the presentation of the other research cycles.

Third, the primary focus on theory building that was supported reduces the expectation of achieving substantial organisational change inherent in the AR approach. This might be considered useful by those employing action interventions for the first time or for researchers who lack the organisational power or stakeholder support that is

Table 1 - Overview of cycles based on structured-case phases – adapted from Koeglreiter (2009)

<i>Phase/ Cycle</i>	<i>Cycle One (CF1)</i>	<i>Cycle Two (CF2)</i>	<i>Cycle Three (CF3)</i>	<i>Cycle Four (CF4)</i>	
<i>Plan</i>	<i>Diagnose</i>	Identify CoP activities and declare membership.	n/a	Boundary Conflict. Mediate between CoP and wider organisation	Stagnation of CoP as identified in CF1. Identify new direction of CoP.
	<i>Theory</i>	Examine theory on CoP characteristics with to be able to declare identified group as CoP.	Examine theory on knowledge work as the identified formal activity of the CoP.	Examine theory on boundary conflicts to investigate relationship with wider organisation.	Examine theory on alignment and leadership to investigate effects of contributing to top-down KM.
	<i>Plan</i>	Plan workshop. Design interview schedule.	Design interview schedule.	Plan workshop. Design interview schedule.	Plan workshop. Design interview schedule.
<i>Collect Data</i>	<i>Action</i>	Workshop.	n/a	Workshop.	Brainstorming, workshop.
	<i>Method</i>	Workshop observations. Reflective interviews.	Interviews.	Workshop observations. Reflective interviews; Follow-up interviews after 18 months.	Workshop observations. Reflective interviews.
<i>Analyse</i>	Analysed CoP internal concepts. Identified issues related to membership and trust, power related concerns.	Analysed the task according to the TbKM framework in the context of task and subject matter, and the role of CoP in knowledge work.	Analysed a boundary conflict situated in the context of knowledge work support and knowledge flows.	Analysed workshop and interviews to identify the effects of empowerment and ownership on CoP.	
<i>Conclusion</i>	Confirmed: Group under study meets the characteristics of a CoP.	TbKM framework applicable with some adaptations.	Conflicting thought worlds of CoP and wider organisation are multi-dimensional.	Alignment of informal CoP with formal strategy. Identified the role of Management in top-down/bottom-up KM.	
<i>Reflect</i>	<i>Concepts</i>	CF1 components: Management, CoP, relationships, knowledge work.	CF2 components: Refined knowledge work and added outcomes, output, and resources	CF3 components: Added 'other organisations' and relationship to CoP	CF4 components: Extended top-down KM components. Refined relationships.
	<i>Learning</i>	Complex relationships with various entities of the wider organisation.	The role of a CoP in knowledge work lies in peer support and sharing subject matter expertise.	Organisational dependencies influence knowledge work support and knowledge flows.	Re-invigoration of CoP through leadership and empowerment.

generally required to induce and evaluate significant change. Explanatory power of theory built may consequently lead to increased organisational power and to support from key stakeholders, leading in turn to larger scale organisational change.

Fourth, if cycles are designed to be conducted independent of each other, more time can be taken to thoroughly examine the extant literature, combined with reflections on findings. This assists in gaining deeper theoretical insights over an extended period of time. This is difficult to achieve in AR projects that may require significant results to be achieved over a short period of time to establish organisational change momentum.

Fifth, the complexity associated with comprehensive conceptual frameworks requires the researcher to be able to adequately present the theory building process as a coherent piece of work. AR studies have been criticised for failing this requirement, due to a primary objective of solving an organisational problem. SC with action interventions by its highly structured nature, however, forces the action researcher to return to the relevant existing theory and clearly outline the contribution to the evolving theory throughout the data collection process. The sequence of conceptual frameworks provides a visual and effective representation of dynamic process, and reflects understanding gained at each stage.

Sixth, the process of structured case with action interventions allows capturing diverse project outcomes at each stage, and at the end of the project. Learning from embedded action interventions adds to data interpretation, new elements and relationships for theory building. Practical organisational issues may trigger new interventions and deeper learning. Comparing outcomes from several cycles with interventions help to identify systemic issues, and potentially contribute not only to theory, but to practical outcomes and organisational change.

Despite the clear set of benefits achieved in the reported project, this integration has limitations. Some of the benefits discussed above may not occur in projects with a stronger focus on introducing organisational change. In the combined approach presented, action interventions play subordinate role. This may limit problem solving opportunities, and restrict effectiveness of interventions. Another potential limitation is that deeper understanding of the problem at hand may eventuate in later research cycles, and momentum for action may be lost. Due to the focus on theory building the method may be perceived as time consuming, and may appear to be less effective when only a short window of opportunity is available.

This integrated methodology is not free of common problems inherent in all methodologies which involve a cyclical approach. A decision as to how many more cycles are required, and when saturation point has been achieved is generally difficult. The research process may digress from its main focus, or become too broad and dispersed. However, these limitations can be addressed as the combination of SC and AR is supported by an extended set of research evaluation criteria (Klein & Myers 1999; Narayanaswamy & Grover 2007) (see Koeglreiter (2009)).

In conclusion, it is noted that structured case approach conducted with action interventions have added new research dimensions and opportunities, thus allowing researches to achieve diverse research outcomes. Research with action interventions embedded in SC cycles may be conducted in research contexts other than knowledge management and may be very effective in many areas of IS research.

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