



Managing Process Innovation learning loops in Change-Based Process Management

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Abstract

Purpose: Process management, a solid way of structuring and organising value creation for decades, faces a paradigm shift with an emerging need to evolve. The Change Driven Process Management (CDPM) framework guides on working methods within traditional process management, trust-based process management, process change management, and process innovation management. While there is numerous research on the first three, systematic process innovation management is less explored. The purpose of the paper is to explore this with directed and creative working methods to develop incremental or radical process improvements based on changing societal needs. This implies new working methods with process management enabling faster feedback iterations to foster a learning culture.

Methodology: A multi-case research project was carried out within the Swedish Quality Management Academy (SQMA), leading to the framework of CDPM. The current paper is an extension to CDPM, developing the CDPM phase of process innovation management (PIM). It was conducted by the two authors based on literature and the previous project and on earlier experiences.

Findings: Different turns in managing process improvements are explained with the CDPM framework's clockwise arrows. However, organisations often fall back to low-risk projects focused on control and stability. Hence, to enable process innovation in practise there is a need for direction how to start-up and hand-over innovations. To overcome low risk thinking several heuristics that enable direction for creativity to achieve quality improvement and innovation have been used. This way to also enable process innovation learning loops and interconnected links between change and trust-based process management.

Research limitations/implications: Practical and managerial implications are extended to process innovation guidance to manage different levels of complexity.

Originality/Value: While management of product and service innovation is a topic well described and researched, process innovation management is sparsely researched. In this paper we contribute to this field.

Keywords: Process Management, Innovation, Change

Paper type: Research paper.

1. Introduction

The business environment and requirements on operations are challenged with societal demands that put higher demands to complying with requirements on economic, social, and environmental sustainability. Inflation rate, shorter product life cycles and carbon footprint put pressure on operations to develop new way of working to create value with customers and stakeholders. While process management for several decades has been a solid way of structuring and organising value creation (Davenport and Short, 1990), process management faces a paradigm shift with an emerging need to evolve (Reijers and Mansar, 2005; Backström et al., 2017; Fundin et al., 2020; Gross et al., 2021; Cronemyr et al., 2022, 2024). Cronemyr et al. (2022, 2024) describe a framework for a new expanded way of working with process management as change driven process management (CDPM) with significant change-driven phases with guidance on working methods: 1) control and stability (traditional process management), 2) creativity and stability (trust-based process management), 3) creativity and change (process innovation management), and 4) control and change (process change management), see Figure 1. The CDPM framework is an expansion to traditional process management to speed up process improvements without the risk of ‘quick and dirty’ changes.

Change Driven Process Management

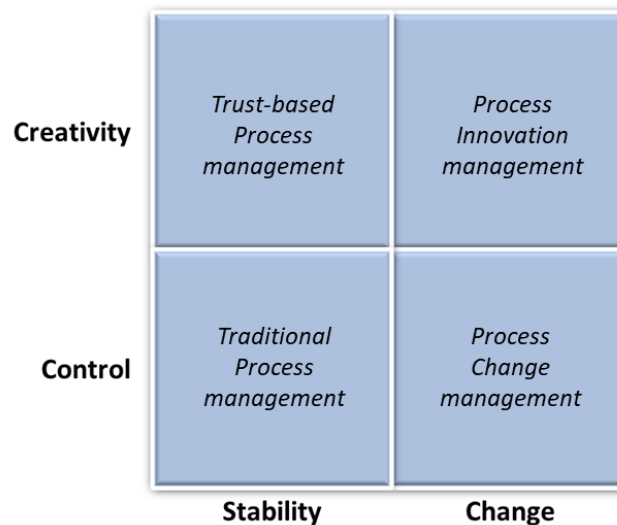


Figure 1 – Change Driven Process Management model with four subsequent quadrants (Cronemyr et al., 2022, 2024).

The working methods of the four CDPM quadrants are described in Figure 2. Also, the CDPM quadrants have been associated to the quadrants of the SECI analytical framework by Nonaka and Takeuchi (1995).

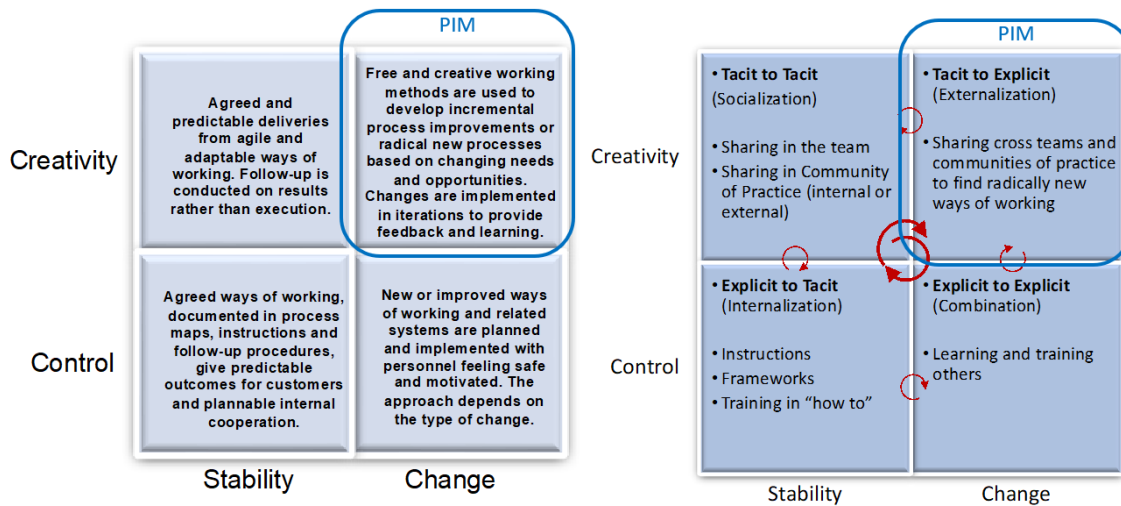


Figure 2 – Working methods of Change Driven Process Management with four subsequent quadrants (Cronemyr et al., 2022, 2024), associated to the quadrants of the SECI analytical framework by Nonaka and Takeuchi (1995). Process Innovation Management (PIM) is highlighted.

While there has been considerable research on traditional process management, trust-based process management, and process change management, research that explore and describe systematic process innovation management (PIM) has been scarce. Hence the purpose of current paper is to further explore process innovation management with directed and creative working methods to develop incremental or radical process improvements based on changing societal needs. This implies new working methods with process management enabling faster feedback iterations to foster a proactive learning culture, as opposed to a reactive ‘blaming culture’ (Cronemyr et al., 2017) focusing on ‘zero defects’. In this context process innovation has a gravity on methods that direct creativity based on societal changing needs. Methods such as Six Sigma process improvements and Design for Six Sigma process development comprise elements of process innovation through structured improvement and development projects. However, these projects are often not connected to the business processes. Hence, the beginning (initiation) and the end (hand-over) of process innovation need to be managed.

2. Theoretical framework

Innovation and Directed Creativity

The word innovation can have different meanings to different people. Some may think of innovation as something totally new, as a surprise, that is not in any way related to existing concepts and, to create an innovation, one must be totally free and unrestrained. On the other hand, others may think innovation could be directed, to solve the right problems and come up with solutions that work and can be integrated in the current context.

Directed creativity as a concept is not new, but from a process management perspective theory on directed creativity could be supportive regarding process innovation management. Several decades ago Plsek (1988) described three basic principles behind the tools of directed creativity. These are ‘Attention’, ‘Escape’, and ‘Movement’. ‘Attention’ is to address attention to an understanding about the current reality with assumptions and what works well and not so well. ‘Escape’ is to escape from current mental patterns, time and place, early judgements or potential barriers, rules, or past experience. Finally, ‘Movement’ is to move in a sense of either time, place, or other points of views.

Furthermore, Plsek (1988) addresses heuristics (*i.e.* mental shortcuts that can facilitate problem-solving) to direct the creativity in organisations. For process innovation management these shortcuts are supportive. It is easy to fall back into the traditional process management paradigm with control and stability and low risk thinking. Control and stability are of course the foundation in process management, but in process innovation management, heuristics could support to escape and move towards a new process state or even a new business process. The heuristics are described by Plsek (1988) as follows:

1. Make it a habit to purposefully pause and notice things,
2. Focus your creative energies on just a few topic areas that you genuinely care about and work on these purposefully for several weeks or months,
3. Avoid to be too narrow in the way you define your problem or topic area; purposefully try broader definitions and see what insights you again,
4. Try to come up with original and useful ideas by making novel associations among what you already know,
5. When you need creative ideas, remember; attention, escape, and movement,
6. Pause and carefully examine ideas that make you laugh the first time you hear them,
7. Recognise that your dreams of thought and patterns of judgement are not inherently right or wrong; they are just what you think now based primarily on patterns from your past,
8. Make a deliberate effort to harvest, develop, and implement at least a few ideas you generate.

From a process innovation management perspective, by using the theories of attention, escape and movement, and by using the heuristics that foster a directed creativity pattern, the following theoretical frame is proposed. See Table 1.

Table 1 – A theoretical frame with principles of process innovation management (PIM) using heuristics.

Heuristics	Attention	Escape	Movement
1. Pause and notice	Traditional PM	PM control and stability	New business or operative process
2. Focus on few topics	Customer needs	Current processes	From past to future customers
3. Broad definitions	Purpose of process	Current roles and definitions	A vision with PM as a solution
4. Novel associations	Current process maps	Current process problems	Future solutions
5. Attention (A), escape (E), and movement (M)	Way of working	Current process maps	New PM paradigm
6. Laugh the first time	Novel ideas	Old process problems	Future process possibilities
7. No right or wrong	Current process experience	Past process experience	Future process experience
8. Test a few ideas	Ideas that develop new processes	Judgements and rules	New integrated processes

3. Method of investigation

Development of the CDPM framework

The Swedish Quality Management Academy (SQMA) with 11 universities recognised the need for a more flexible approach to process management in organisations (Fundin et al., 2018, 2020). The academy initiated a pre-study, interviewing professionals from various sectors (telecom, automotive, healthcare, and social services) to define research relevance. Based on findings, SQMA initiated a research project led by a project manager (with 40 years of process management experience) with representatives from Linköping university, Mälardalen university and the Swedish Institute for Quality.

The pre-study highlighted a critical need for insights into change-driven process management across business domains. A model for Change-Driven Process Management (CDPM) emerged and by following Yin (2018) a holistic multiple case study was designed to explore process management conflicts and dilemmas. Each case study organisation provided examples of two types of processes: one with detailed procedures and high compliance requirements, and another relying on vaguely formulated principles and individual skills. The case study comprised six process management professionals from four companies across Sweden, France, and Germany. These professionals were employed by Swedish companies operating in the energy, automotive, and medical technology sectors. Notably, the research project involved the same three researchers/authors who conducted the preliminary study.

The three project members conducted data testing and analysis and compared their findings with existing theories. The results were validated through collaboration with four organisations structured into 6-week iterations, yielding validated outcomes for immediate use by the participating organisations. Over a 17-week period, including project setup, backlog organisation, iteration conclusions, and retrospectives, the project team held 17 weekly meetings to improve the construct validity and to reach empirical maturity. Using the agile research methodology, rapidly attained empirical maturity could be achieved, closely aligning with operational requirements.

Methodology of the current study

Current study is limited to process innovation management (PIM) described through the interlinkage of creativity and change, see Figure 2. Theoretically it focuses on externalisation and a Tacit-to-Explicit context following the discourse of Nonaka and Takeuchi (1995). Due to the dynamic perspective in the model and lack of research, our study also includes the PIM interfaces with Creativity & Stability and Creativity & Change, as are indicated by the clockwise arrows in Figure 2. The outcome of the previous CDPM project and the combined experiences of the researchers have been analysed in the view of directed creativity (Plsek, 1988).

4. Results

The research resulted in a decision support model for change driven process management (Cronemyr et al., 2022, 2024). Change and Creativity is about Process Innovation Management with externalisation, e.g. innovative and radical process changes. The findings in current paper are exploring the interconnections and feedback and learning loops that enable a movement from Creativity and Stability (Trust-based process management) and Control and Change (Process Change Management). While trust-based process management is putting a gravity on process results rather than process execution (socialisation), process change management is about integrating an intended change into practise (combination); in other words, learning and training about the new innovative way of managing a new process.

The different turns in managing process improvements are explained with the clockwise arrows in the model, that is, a radical change might need to be managed through all four

quadrants, while minor changes might only need to pass one or two quadrants depending on complexity and stakeholder needs. Process innovations could be incremental or radical depending on societal needs, that is, process innovation requires transparency and creative working methods. However, our study reveals that even if organisations have intentions to change or develop new business processes, the investments seem to fall back to low risk projects with a gravity on control and stability. Hence, to enable process innovation in practise need a solid frame of direction in terms of working methods that foster creativity that enable new ways of working. To overcome low risk thinking Plsek (1997) describe several heuristics that enable direction for creativity to achieve quality improvement and innovation. Current paper elaborates further on what and how heuristics could foster process innovation in organisation. This way to also enable process innovation learning loops and interconnected links between change and trust-based process management.

The three main activities within process innovation management (PIM) can be described as a sequence of activities, see Figure 3.

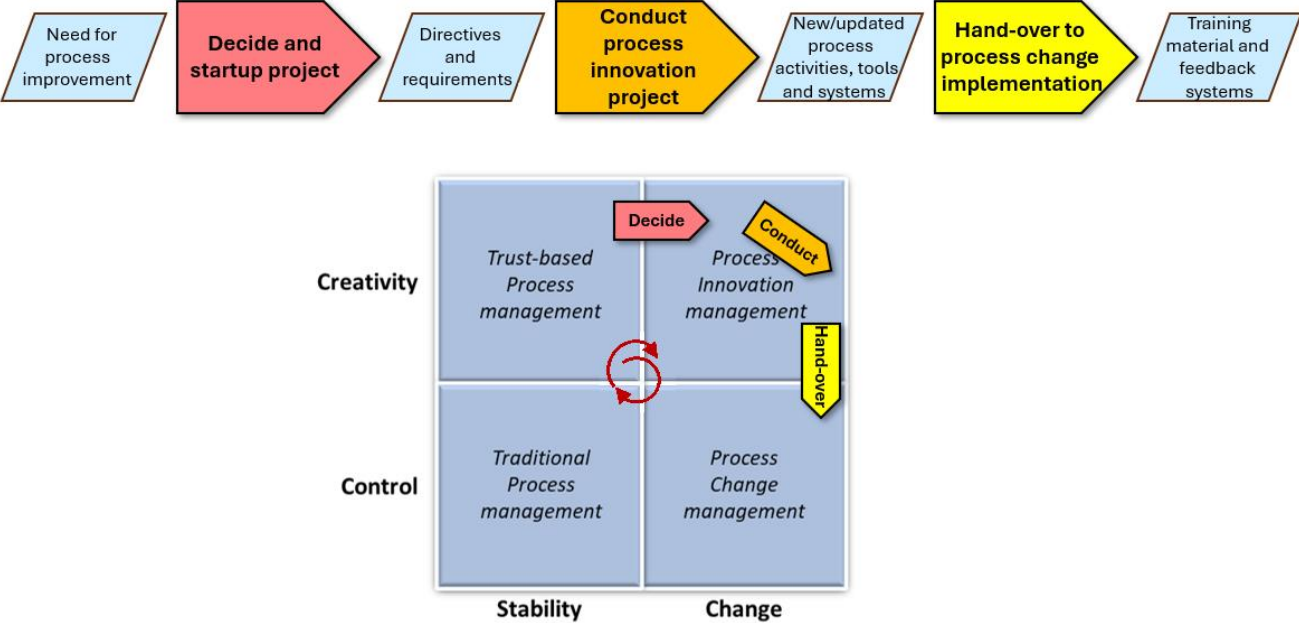


Figure 3 – The three main activities within process innovation management (PIM) described as an elemental process map in the CDPM model. (Cronemyr et al., 2024)

Innovation is carried out in the activity ‘Conduct process innovation project’. This is the main topic of ‘innovation research’ (which is not the main topic of this paper), however Process Innovation Management also includes how to start-up innovation projects and how to hand-over results. Looking into these three activities, start-up and hand-over benefit from a structured way of working. Innovation may, or may not, be structured.

Decide and start-up projects

Information about recurring problems and/or suggestions to process improvements may occur during daily operations. Management needs some established method of managing these. Information and suggestions need to be collected, documented, clustered, and prioritised, so improvement projects can be selected, planned (both in time and for resources), and kicked-off. This should preferably be organised according to established business, support or management

processes with process owners and teams. Different types of problems need different type of improvement projects, both in scope and in selected methodology (see the example in Figure 4 from Cronemyr, 2007a).

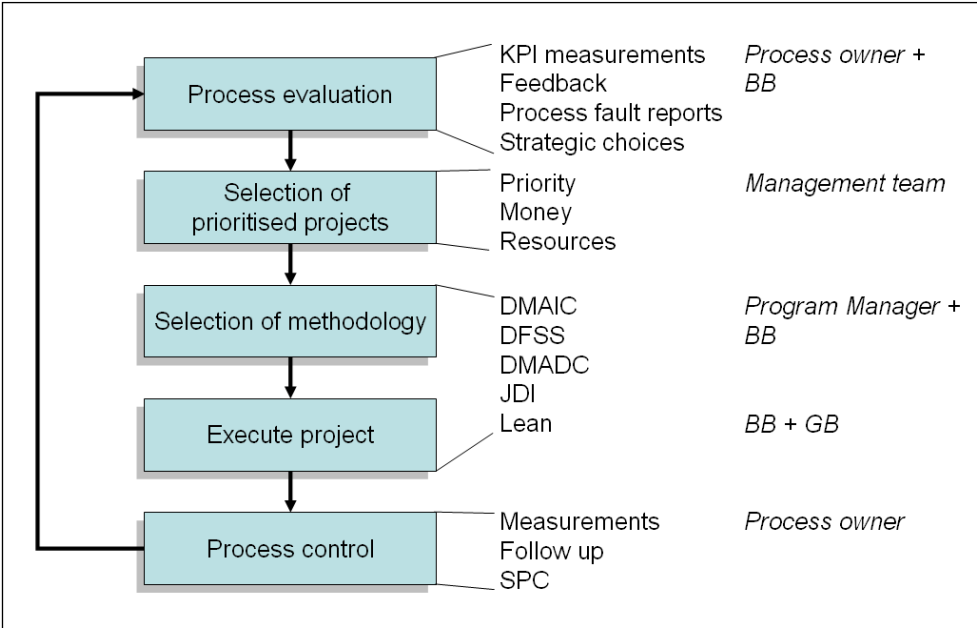


Figure 4. Project selection loop as used at Siemens (from Cronemyr, 2007a)

Related to the CDPM model, some decision points are however needed to determine the magnitude of the change based on complexity (Cronemyr and Danielsson, 2013; Cronemyr and Huge-Brodin, 2020, Cronemyr *et al.*, 2022, 2024), see table 2.

Table 2 – Process change complexity levels

Complexity	Process impact	People concerned	Duration
Narrow process change	Within one process	Few	Days
Medium process change	One or few processes	Many	Weeks
Wide process change	High-level processes	Large parts of the organisation	Months

‘Narrow impact’ remains within the quadrant for Trust-based Process Management. These are typically continuous, small change and improvements with very narrow scope such as ‘Just Do It’ (JDI). ‘Medium impact’ regards a potential innovation that requires inter process synchronisations. These are characteristically Lean projects or smaller Six Sigma (DMAIC) projects with a medium scope mainly within one process. ‘Wide impact’ however, concerns radical innovation with significant impact on other processes. These are a type of major Six Sigma (DMAIC/DMADC) projects or Design for Six Sigma (DfSS) projects, see Cronemyr (2007b).

Conduct process innovation projects

Innovation projects can be either totally free and *unrestrained* or they can be *directed* using some procedure, often called ‘roadmaps’. An example of *unrestrained* procedure is the ‘technology stream’ as presented by Clausing (1994). Specialist domains typically freely invent new and better solutions to old and new problems. Once the innovations have been tested in

small scale, they are ‘fished up from the technology stream’ to be implemented in current products and operational processes (Clausing, 1994). However, that may lead to problems with too closed knowledge/engineering domains and not ‘quick and clean’ solutions (Clausing, 1994). An alternative approach with ‘semi-free’ innovation projects that are aligned with performance goals and a major strategy was presented by Cronemyr (2000) as ‘phantom development’.

Examples of *directed* innovation roadmaps are Six Sigma (DMAIC, Define–Measure–Analyze–Improve–Control) and Design for Six Sigma (DfSS). Both are used for process improvement projects and use both statistical data analysis and innovation methods. In the Improve phase of a DMAIC project and the Design phase of a DfSS project many innovation tools are used, *e.g.* brainstorming, best practice etc. All proposed process improvements are evaluated, analysed for possible risks, and pilot tested before they are implemented in the existing processes. Creation of completely new processes is very rare, even though processes with non-performance may need a ‘new’ way of working (see *e.g.* DMADC, Define–Measure–Analyze–Design–Control, in Cronemyr, 2007b).

Hand-over to process change implementation

When it comes to any type of development project, the output needs to be put into context to be of any value. For process innovation projects this implies new and updated process activities, tools and systems need to be transferred into quality management systems and that employees should be informed and trained in the new/updated process. It is for example not sufficient to submit a message on the intranet that ‘the process has been updated’.

A hand-over to Process Change Management should contain training material and feedback systems. The implementation then contains the following activities (Cronemyr *et al.*, 2022): publish new process in QMS (and remove all old/replaced documents); set up implementation and training plan; implement system support and feedback systems; train managers how to manage according to the process; train employees how to work according to the process; official process launches by process owner. It is important that all employees feel safe and confident how to work according to the new process. Otherwise, they will not change their activities nor behaviour. That is also why managers are trained ahead of co-workers. Managers need to feel safe when co-workers ask questions ‘why/how should I do this?’.

The hand-over from Process Innovation to Process Change should be structured but not too structured. Certain aspects or problems may come up during the training as feedback to the process improvement team to make minor updates of the proposed process solutions. That is why the transition needs to be somewhat iterative.

5. Analysis

Accordingly, the movement through the PIM activities ‘Decide’, ‘Conduct’, and ‘Hand-over’ could be managed in different ways depending on levels of complexity. The heuristics for process improvements in line with the theoretical framework is proposed as a supportive framework to guide and manage. By integrating the heuristics with the three PIM activities a new decision support framework is proposed to add to the theoretical discourse of process management, and more specifically on change-based process innovation management. The analytical framework (see Table 3) is also proposed as a means for decision makers to be prepared on how to be managing and decide on not only narrow complexity levels, but also medium or even wider process changes.

In the PIM context heuristics are mental shortcuts to facilitate problem-solving finding new solutions. The heuristics should be used to hinder fall-back solutions in, for example, Six Sigma projects. The heuristics provide guidance in situations when the creativity needs direction when decisions are made (*Decide and start-up projects*), during development activities (*Conduct*

process innovation projects), and when integrating new processes into operations (*Hand-over to process change implementation*).

Table 3 – Process Innovation through Directed Creativity in Change-Based Process Management – a decisions support framework

Heuristics	Attention	PIM activities	Escape	Movement
1. Pause and notice	Traditional PM	Decide on complexity level (narrow, medium, wide)	PM control and stability	New business or operative process
2. Focus on few topics	Customer needs	Decide the few topics	Current processes	From past to future customers
3. Broad definitions	Purpose of process	Decide what definition to use	Current roles and definitions	A vision with PM as a solution
4. Novel associations	Current process maps	Conduct through novel associations	Current process problems	Future solutions
5. Attention (A), escape (E), and movement (M)	Way of working	Conduct using ‘A’, ‘E’ and ‘M’ as guiding principles	Current process maps	New PM paradigm
6. Laugh the first time	Novel ideas	Conduct by focusing future process possibilities	Old process problems	Future process possibilities
7. No right or wrong	Current process experience	Hand-over through fostering a learning culture	Past process experience (blame culture)	Future process experience (learning culture)
8. Test a few ideas	Ideas that develop new processes	Hand-over with feedback and learning loops to improvement teams	Judgements and rules	New integrated processes

6. Conclusions

This research contributes to the discourse on process management theory and practise regarding managing process improvements. Especially it contributes on the critical evolvement of process innovation management and the interconnected links with trust-based process management and process change management. The research aims to provide process improvement support in situations when radical process improvement efforts do not have the intended effect according to what is envisioned.

Theoretically the paper contributes with a new process innovation management framework by using directed creativity in a change-based process management context. By integrating the CDPM model with heuristics and experiences of process innovation management, the new theoretical framework aiming to pave new ways for a new process management paradigm that is adaptable to current societal demands. The managerial and practical implications of the research are a new decision support framework to be utilised in situations when current process management principles do not comply with current or future stakeholder demands.

Transition from process innovation management to process change management often needs to be iterative to accommodate feedback and make necessary adjustments. This flexibility allows organisations to refine process improvements based on real-world application and feedback from employees. Such an approach not only enhances the effectiveness of process improvements but also fosters a culture of continuous improvement and innovation within the organisation.

Even if the research is conducted together with a range of private and public organisations, it is limited to a conceptual level. Future research should make in-depth empirical investigations on the three levels of complexity to refine the proposed framework and to contextualise depending on different process change situations. Due to the empirical and theoretical foundation, the analytical generalisation is extended to both the public and private sector.

Acknowledgements

We thank the eight organisations representing the automotive, energy, medical technology, healthcare, telecom, and social services sectors for their commitment and engagement in the research project.

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