A performance measurement system for change initiatives

An action research study from design to evaluation

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Abstract

Purpose – The purpose of this paper is to develop, implement, test and further enhance a framework for measuring organizational change initiatives.

Design/methodology/approach – The conceptual part of the framework is based on the structured analysis of existing literature. The framework was further developed during an action research (AR) study where the authors developed, implemented, evaluated and improved the measurement system for organizational change initiatives.

Findings – The academic literature is rich in conceptual articles providing required characteristics of a "good" measurement system and frameworks for how organizations should measure performance. However, academia provides less empirical evidence of how these performance measurement systems can be implemented, evaluated and improved. In this paper, the authors present a study where the developed measurement system has been implemented, evaluated and improved. The results in terms of how the actual framework worked as well as the response from the case organizations are equally positive.

Research limitations/implications – The framework has been implemented in two different, major change initiatives in one case organization. While the results are truly encouraging, the framework needs to be further tested and refined in more organizations.

Practical implications – There is a gap between academic perception and practical reality regarding how organizations should measure performance in general as well as measuring organizational change initiatives. The presented, and empirically tested, framework measures both the results of the change initiative (effectiveness) the actual change process (efficiency) as well as the perception of the change initiative and process from different key stakeholders.

Originality/value – This is the first developed, implemented and further improved measurement system for organizational change which measures both the efficiency and effectiveness of the change initiative (process).

Keywords Change management, Action research, Performance measurement systems, Change initiative

Paper type Research paper

1. Introduction

Both practitioners and academics frequently use clichés such as "what gets measured gets done" and "the only constant thing in business is change." Thus, it is not surprising that several authors discuss the importance of organizational change as well as the importance

of measuring change initiatives (Taskinen and Smeds, 1999; Bourne *et al.*, 2003a, b; Grote, 2008; Elving *et al.*, 2011; Parkes and Davern, 2011; Jääskeläinen and Sillanpää, 2013). However, when it comes to actual frameworks for measuring organizational change initiatives, only a few conceptual frameworks exist (Taskinen and Smeds, 1999; Teh and Pang, 1999; Taskinen, 2003). The empirical research concerning implementation and evaluation of these systems is inadequate and the knowledge of the impact a measurement system could have on organizational change initiatives is limited (Franco-Santos *et al.*, 2012).

The situation is similar for performance measurement systems (PMS) in general. Over the last 30 years, academic authors have provided various models and frameworks for how organizations could measure performance (see e.g. Neely, 1999; Bitichi *et al.*, 2012; Choong, 2013a, b; Yadav and Sagar, 2013; Choong, 2014; Parida *et al.*, 2015). Yet, the empirical evidence of their applications is often less well described. Neely *et al.* (2000) describe four phases in the PMS lifecycle: design, implementation, use, and evaluation of the system to maintain it (See Figure 1). Not surprisingly, the design phase is by far the most portrayed. Nudurupati *et al.* (2011, p. 281) write: "[…] implementation as well as using and updating PMS has received attention only in recent years." However, the lack of articles dealing with implementation of measurement systems, and the fact that articles tend to be more descriptive than analytical is a recurring theme in literature reviews over the years (Neely, 1999; Brignall and Modell, 2000; Bourne *et al.*, 2003a; Nudurupati *et al.*, 2011; Tung *et al.*, 2011; Bitichi *et al.*, 2012; Franco-Santos *et al.*, 2012; Gopal and Thakkar, 2012; Choong, 2014a, b; Parida *et al.*, 2015; Meastrini *et al.*, 2017).

Thus, a gap seems to exist between academic perception and practical reality when it comes to PMS – both in general as well as for organizational change initiatives. Significant complications range from strategic to operational issues and there are problems with definitions, terminology and lack of standards (see e.g. Neely, 1999).

Few rigorous empirical studies exist, and the impression is that many articles are of questionable academic quality since data collection and data analysis are often lacking in description (see e.g. Tung *et al.*, 2011; Franco-Santos *et al.*, 2012; Brignall and Modell, 2000). Trustworthiness suffers when the connection between the goal and the approach of the study is unclear. Bourne *et al.* (2003a, p. 20) indicated the lack of serious implementation research, stating it is an "[…] important deficiency in our knowledge of performance measurements."

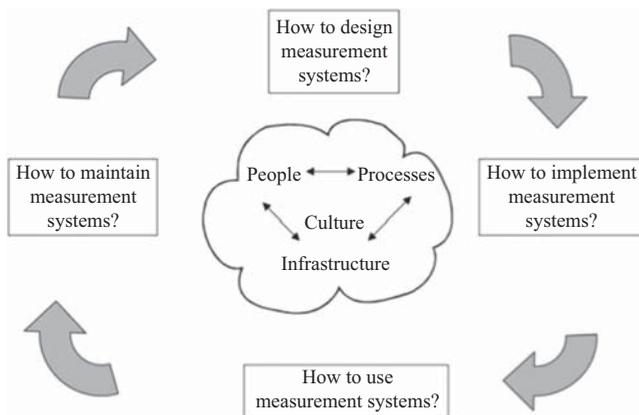
Figure 1.
Phases in the lifecycle of a measurement system

Source: Neely *et al.* (2000)

Another problem is the lack of theoretical foundation in many published articles (Perego and Hartmann, 2009). Choong (2013a) means that the field is neither theoretically nor conceptually developed. One could also argue that performance measurement is not an established academic discipline. Articles dealing with the topic are published in a variety of disciplines. This can create an issue as performance measurement is a systems problem yet disciplinary expertise is organized in silos. Thus, any field relying on systems approaches will be poorly developed in academic settings. Despite the increased number of articles, the actual evolution is insignificant. Neely (1999), for example, summarized the main problems in the field 20 years ago, and his summary is not significantly different from similar reviews in more recent articles (see e.g. Yadav and Sagar, 2013; Choong, 2014a, b). Furthermore, the influence by practitioners and consultants may not lead to positive consequences for the academic development of the field (see e.g. Bourne *et al.*, 2003b).

Thus, while there is consensus that more research is needed when it comes to empirical research regarding PMS for organizations as well as for organizational change initiatives, it may be beneficial to begin with the latter as it represents a smaller system. Furthermore, given the seemingly increasing importance of organizational change, it is surprising that more research does not exist regarding measurement systems for organizational change. Thus, the purpose of this paper is to develop a measurement system for organizational change initiatives.

2. Methodology

In exploratory research, where conceptual development is in its formative stage, case studies can provide depth and richness allowing the researchers to search for patterns to help them understand what is happening, and how and why it is done (Ellram, 1996; Stuart *et al.*, 2002; Yin, 2003; Marshall and Rossman, 2006). This research has been conducted as an AR study. AR is a form of case study that places increased emphasis on relevance (Naslund, 2002). AR deals with real-world organizational problems and thus projects should, ideally, contribute both to practice and science (Argyris, 1993; Avison *et al.*, 1999; Ellis and Kiely, 2000; Gummesson, 2000; Coughlan and Coghlan, 2002; Raelin and Coghlan, 2006).

The ideal problem domains for AR are thus those where the researcher is actively involved, the knowledge can be immediately applied, and the research process links theory and practice (Baskerville and Wood-Harper, 1996; Susman and Evered, 1978). The outcome is typically both an action and research (Coughlan and Coghlan, 2002), where research is used to inform practice, and practice is used to inform research (Näslund *et al.*, 2010). Ross *et al.* (2006), for example, refer to four distinguishable characteristics of AR which are equally applicable to our study: it emphasizes the complex and multivariate nature of the problem domain; it simultaneously addresses solving of a practical problem (e.g. evaluate change initiatives) and expanding research knowledge (develop measurement system); it is a collaborative effort between researchers and managers; and it is primarily applied to understand various aspects of change.

Despite the potential of AR in applied fields such as operations and SCM, comparatively few AR articles are published in leading journals (Naslund, 2002; Frankel *et al.*, 2005; Näslund *et al.*, 2010). One reason for this reluctance to adopt AR can be attributed to the lack of rigor in some of the previously published works (Voss *et al.*, 2002). On the other hand, there is a continuous discussion and increased demand for more relevance in research as too few published articles include both good research and workable answers for managers (see e.g. Alvesson, 1996; McCutcheon and Meredith, 1993; Markides, 2007; Shapiro *et al.*, 2007). Toffel (2016, p. 1) wrote "Much of today's business school scholarship is far removed from the actual practice of management." Naturally, being applied and relevant cannot and

should not be an excuse for doing research that is not rigorous. In this paper, we follow the guidelines for AR, as suggested by Näslund *et al.* (2010), who suggest that rigorous AR should include a detailed discussion of three major categories: design, data collection and data analysis.

2.1 Design aspects

The case organization in this study is the Swedish Transport Administration, which is responsible for the overall long-term infrastructure planning of road, rail, sea and air transport. Based on a pre-study, the researchers and the headquarter (HQ) of the case organization decided that an AR study over two and a half years would be the best research approach. The case organization is implementing several change initiatives and thus the idea of developing a measurement system in order to track progress and results of these initiatives was appealing to them. In the spirit of relevant and rigorous AR, we could advance theory and practice in a collaborative manner.

A key aspect of a rigorous research design is the adequate description of the unit of analysis. In AR, the unit of analysis is treated as an active object. The unit of analysis in this study is a change initiative in the case organization. The change initiatives were selected by HQ. The first change initiative alpha (α) considers an implementation of a new information system to support long-term planning of infrastructure investments. The second change initiative beta (β) is similar in nature but larger in scale and affecting more people. It is about the implementation of a new IT system but also work routines for maintenance – both planning and operations. Many divisions of the case organization will be affected by these two implementations: planning and maintenance, as well as both road and railways. From a general perspective, these are quite common change initiatives: implementation of a cross-functional information system to improve corporate processes.

2.2 Data collection and analysis aspects

AR projects are often characterized as cyclical in nature – corresponding to the cyclic loop of learning – with phases of planning, action (implementing), observing (evaluating), and overall analysis and reflection as a basis for new planning and action (Ballantyne, 2004; Coghlan and Brannick, 2001). A difference between AR and other forms of case studies is the involvement of the researcher(s) in the case. Unlike more traditional forms where the researcher participates as a passive observer outside the subject of investigation, s/he becomes an active participant in AR (Checkland, 1993; Naslund, 2002; Schein, 1987). In this cycle, the researcher is involved in the actual project, and then steps aside to meticulously reflect and analyze what happened in the organization (Daudelin, 1996). AR therefore requires a combination of participative action and critical reflection from the researcher since he/she both contributes to, and evaluates, the change process during the participation (Dick, 2001; Naslund, 2002; Ballantyne, 2004; Kates and Robertson, 2004). Thorough understanding and analysis constitute a key requirement for taking new action. This cyclical approach, with significant phases of reflection and analysis, is a vital difference between AR and consulting and thus these cyclical steps have to be clearly described in the article (see Table I and case description).

Naturally, this fact has consequences not only for the required skills of the researcher, but also for how the researcher conducts the research part of the change project. Multiple forms of data collection methods as well as triangulation are also recommended (Silverman, 1993; Coughlan and Coghlan, 2002). Similarly, a team-based approach is encouraged as a research team can increase the rigor of data collected in terms of reliability as well as reduce the risk of bias (investigator triangulation). Thus, Baskerville and Wood-Harper (1996) recommend two or more researchers relating to the same phenomenon. Furthermore, throughout the research process thoughts and ideas of the research are

Phase	Researchers	HQ	Researchers + α	Researchers + β
Pre-planning	Theory studies (performance measurement systems) Develop research proposal	Accept and fund research proposal		
Planning	Theory studies (performance measurement + change initiatives) Develop and design conceptual measurement system (CIMS)	Identify change initiatives within case organization	Selling idea to larger project group Develop specific questions for all phases in the change initiative	Selling idea to larger project group Develop specific questions for all phases in the change initiative
Action and implementation	Develop actual web survey and send out		Implement Survey I	Implement Survey I
Observing and evaluation	Evaluate responses (individually and combined)		Leaders of project management team evaluated responses individually	Top project management team evaluated responses individually
Analysis and reflection	On three levels For each change initiative For the case organization On meta level – theoretical contribution	Results were shared with HQ in seminar form	Results were analyzed and discussed with researchers Actions were developed for next phase (maintain)	Results were analyzed and discussed with researchers Actions were developed for next phase (maintain)

Table I.
The action research
process

shared and discussed with the participating organization(s). Joint project reviews will enhance the understanding and also take the learning forward – for both the researcher and the organization (Gummesson, 2004; Raelin and Coghlan, 2006). In Table I we have summarized the main steps in the AR cycle based on activities performed by the researchers, HQ (case organization headquarter) and the two change initiative cases case (α and β). The description on Table I also strives to follow the main steps in the performance measurement lifecycle.

3. The case
Given the cyclical nature of an AR project, we have structured the case presentation after the four phases in the performance measurement lifecycle (Neely, 1999). From a research perspective, each phase was in itself a cycle in the AR project and each phase often consisted of several research loops with various activities. Thus, we first present a comprehensive description of how the PMS was designed. Then we describe the implementation of the system, followed by analysis and evaluation before we discuss future research.

3.1 The design phase
A significant part of the design phase included a comprehensive review of the literature – both related to performance measurements in general but also regarding organizational change initiatives. Although no formal definition of PMS exists and the field thus suffers from slight confusion to the meaning of PMS (Franco-Santos *et al.*, 2007), an often referred to definition is the one by Neely *et al.* (1995, p. 81) who define the performance measurement concept as "[…] the set of metrics used to quantify the efficiency and effectiveness of actions." However, the specific meaning of the terms effectiveness and efficiency are not particularly clear (Choong, 2013a) and there is no consensus on how to actually classify categories of performance metrics/measures (Braz *et al.*, 2011).

Given this deficit in the literature, one could argue that it is not truly known which aspects are important for a measurement system or what a "good" measurement system looks like. Still, existing articles indicate areas of importance. A measurement system should be based on, aligned with, as well as support, the organizational strategy (Gomes *et al.*, 2011; Choong, 2013a). Similarly, a balanced approach is often highlighted as key for a successful PMS (Kaplan and Norton, 1992; Kanji, 2002; Tung *et al.*, 2011). The balanced approach also stresses the importance of leading vs lagging measures. Since financial measures are lagging, they can be misleading as potential problems in the processes may not show up instantly in the financial results (Neely *et al.*, 2005; Tangen, 2005; Tung *et al.*, 2011; Franco-Santos *et al.*, 2012; Choong, 2013a, b; Taticchi *et al.*, 2013).

The importance of systems theory/systems thinking is emphasized by many authors who also, almost ironically, notice that most of the conceptual systems do not seem to be founded on systems thinking/systems theory (e.g. Franco-Santos and Bourne, 2005; Franco-Santos *et al.*, 2007; Taticchi *et al.*, 2010; Yadav and Sagar, 2013; Choong, 2013b, 2014b). On the contrary, most systems seem to be founded on a traditional, analytical approach – both from a measuring and a management/strategic perspective. Another ideal condition is the cross-functional process based PMS (e.g. Kueng, 2000; Glavan, 2011; Wieland *et al.*, 2015). The core cross-functional processes are the link between strategy and operations, and thus it is via measuring process performance that organizations can develop measurement systems founded on and aligned with the organizational strategy (Näslund, 1999). Finally, the importance of including customer and stakeholder perspectives is often mentioned. However, Neely (1999) argues that an often vague definition of the customer makes it complicated to capture effectiveness. The term "stakeholder" is equally problematic and for that reason it is important to define key stakeholders in order to measure performance from different key stakeholders' perspectives (Franco-Santos *et al.*, 2012; Choong, 2014b; Melnyk *et al.*, 2014).

3.1.1 PMS for measuring organizational change initiatives. In a similar manner, it is critical for organizations to understand how to better manage and cope with change (Geanuracos and Meikiejohn, 1993; Szamosi and Duxbury (2002). Taskinen and Smeds (1999) even mean that the efficient and effective management of change is becoming more important than the effective management of operations in order to stay competitive. Teh and Pang (1999) describe organizational transformation as a complex process, and therefore suggest that performance measures can act as a compass and guide the organization through the change. Prosci (2012) states that the success of change management is represented by the degree to which the change objectives are realized – in other words, by measuring. Having a change measurement system is a way of assessing and monitoring the present situation and enables identification of flaws and gaps between the "as is" and "should be" (Barbosa and Musetti, 2011; Fiorentino, 2010).

One important aspect when measuring change initiatives is to define the outcome – what does success look like? Methods of measuring the success of organizational change are needed in order to evaluate the value of any new frameworks (By, 2004). Sullivan *et al.* (2011) argue that too few organizations sufficiently emphasize the long-term measurement of change in the final phase of institutionalization. Thus, in order to evade the results of change being short-lived, they suggest that change efforts need to be measured over a long period of time. Neely *et al.*'s (2000) ideas of a process based system where both effectiveness and efficiency is emphasized can also be applied – with both quantitative and qualitative measures.

Measuring change readiness is a key aspect. In order to assess change readiness organizations should evaluate five success factors for mastering change management: executives' support; commitment to develop end-to-end process strategy; the ability to develop a convincing business case; deciding on change management methodology; and the

ability and previous record in maintaining the engagement and involvement of all
stakeholders (Sabri and Verma, 2015, p. 133). However, they do not present any
measurement or assessment tool for the evaluation.

Regularly communicating the importance of change in all stages of the change initiative
is crucial to individual adoption of change and to motivate members to continue working on
the change initiative (Wheelan Berry and Somerville, 2010). Communicating goals and
performance targets, expected behavior and feedback actions should be motivating and
encouraging. Measuring signals that the change is important enough to be monitored and it
can be a way to effectively communicate to employees (and potentially other stakeholders),
and ultimately a way of affecting people's commitment to change (Barbosa and Musetti,
2011). Sabri and Verma (2015) add the importance of acknowledgment of and reward for
new behavior, as well as the importance of updating performance measures to reflect new
performance baselines.

3.1.2 Steps of planned change initiatives. While different approaches to organizational
change exist (e.g. planned, emergent, contingency), we follow the planned approach
(Burnes, 1996; By, 2004). The planned approach emphasizes the importance of
understanding the different states an organization will have to pass in order to move
from an unsatisfactory state to an identified desired state (Eldod II and Tippett,
2002). Although criticized, the planned approach is well established and held to be
effective (By, 2004). It was initiated by Lewin (1947), who proposed that a successful
change initiative should involve three distinct steps: unfreezing the present level, moving
to the new level and refreezing this new level. This three-step model is broad, and over the
years authors have operationalized it into several sub-steps with slightly different
terminology (Judson, 1991; Kanter *et al.*, 1992; Kotter, 1995; Galpin, 1996; Kettinger *et al.*,
1997; Armenakis *et al.*, 1999; Luecke, 2003; Fernandez and Rainey, 2006; Greer and Ford,
2009; Ackerman Anderson and Anderson, 2010; Kickert, 2014; Sabri and Verma, 2015)
(Table II).

During the Summer of 2016, we developed the framework to our measurement system –
change initiative measurement system (CIMS – see Figure 2) – based on several key aspects:

(1) It is founded on Neely's ideas of a measurement system to capture process
improvements both in terms of effectiveness (customer) and efficiency (resources,
time, cost, quality) as well as the internal environment improvements (positive
cultural change, more satisfied employees, etc.). The measurement system should
also capture the effectiveness and efficiency of the change project itself – how the
change initiative was conducted/progress toward change. It is important to identify
warning signals (find red flags) before certain aspects impair the project
development. In addition, if these potential threats are identified then corrective
action can be taken as early as possible.

(2) The framework also strives to capture the status of the change initiative from
different key stakeholders' perspectives. The main stakeholders mentioned in most
change management literature are top management, change leaders/agents and
future users.

(3) From a theoretical perspective, we had identified a gap as measurement systems
related to organizational change efforts almost constitute a white space in academic
literature. From a practical perspective, the case organization needs a system to
evaluate change efforts.

(4) From a managerial perspective, the AR approach means that the system will be
collaboratively developed, designed, evaluated and redesigned. The systematic AR
approach will enhance both relevance and rigor of the research.

Lewin (1947)	Judson (1991)	Kanter et al. (1992)	Kotter (1995)	Galpin (1996)	Kettinger et al. (1997)	Armenakis et al. (1999)	Luecke (2003)
1. Unfreezing	1. Analyzing and planning change	1. Analyze the organization and its need for change	1. Establishing a Sense of Urgency	1. Establishing the need to change	1. Envision	1. Discrepancy (we need to change)	1. Mobilize energy and commitment
	2. Communicating the change	2. Create a shared vision and a common direction	2. Forming a Powerful Guiding Coalition	2. Developing and disseminating a vision of planned change	2. Initiate	2. Self-efficacy (we have the capability to successfully change)	2. Develop a shared vision of how to organize and manage
	3. Gaining acceptance of new behaviors	3. Separate from the past	3. Creating a vision	3. Diagnosing and analyzing the current situation	3. Diagnose	3. Personal valence (it is in our best interest to change)	3. Identify leadership
		4. Create a sense of urgency	4. Communicating the vision	4. Generating recommendations	4. Redesign	4. Principal support (those affected are behind the change)	
		5. Support a strong leader role				5. Appropriateness (the desired change is right for the focal organization)	
		6. Line up political sponsorship					
2. Moving	4. Changing from status quo to a desired state	7. Craft an implementation plan	5. Empowering Others to act on the vision	5. Detailing recommendations	5. Reconstruct		4. Focus on short-term results, not activities
		8. Develop enabling structures	6. Planning for creating short-term wins	6. Pilot testing the recommendations			5. Start change at the periphery
		9. Communicate, involve people and be honest		7. Preparing recommendations for roll-out			6. Institutionalize success through policies, systems and structures
				8. Rolling out recommendations			

(continued)

Table II.
Overview of different sources related to Lewin (1947)

Lewin (1947)	Fernandez and Rainey (2006)	Greer and Ford (2009)	Ackerman Anderson and Anderson (2010)	Kickert (2014)	Sabri and Verma (2015)	Sub-steps in our model
1. Unfreezing	1. Ensure the need	1. Problem analysis	1. Prepare to lead the change	1. Establish sense of urgency, ensure the need for change, build internal support	1.1 Assess organization change readiness	1.1 Problem analysis
		2. Action Planning	2. Create Organizational Vision, Commitment and capability		1.2 Identify need, transformation team, success criteria and change roadmap	1.2 Get need for change jointly accepted
	3. Build internal support		3. Assess the Situation to determine design requirements	2. Develop a vision and strategy, provide a plan.	1.3 Develop communication plan	1.3 Formulate and communicate vision/strategy of change
	4. Ensure top management support		4. Design the desired state	3. Communicate the change, empower employees for action	1.4 Articulate cultural support plan (educational need, organizational structural alignment)	1.4 Ensure management support
			5. Analyze the impact	4. Ensure top management support and commitment, create a guiding coalition		1.5 Ensure change recipient support
3. (Re)freezing	5. Consolidating and institutionalizing the new state	10. Reinforce and institutional change	7. Consolidating improvements and Producing still more change; 8. Institutionalizing new approaches	9. Measuring, reinforcing, and refining the change	6. Evaluate	7. Monitor and adjust strategies in response to problems in the change process

(*continued*)

Table II.

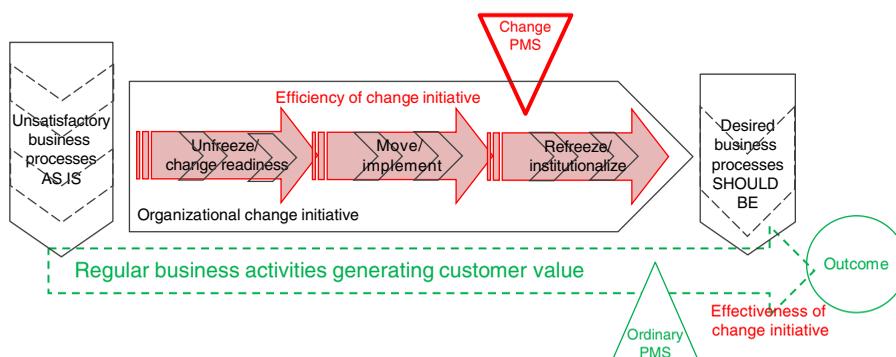|						
2. Moving	2. Provide a plan	3. Skills development	6. Plan and organize for implementation	5. Build external support	2.1 Execute change plan	2.1 Develop implementation plan
			7. Implement the change	6. Provide resources	2.2 Evaluate supply chain transformation progress	2.2 Create organization and get resources
	5. Build external support	4. Behaviour management				2.3 Develop skills
						2.4 Monitor
	6. Provide resources	5. Management control				
3. (Re)freezing	7. Institutionalize change		8. Celebrate and integrate the new state	7. Institutionalize change	3.1 Improve SC transformation progress	3.1 Management control. monitoring and adjustment
	8. Pursue comprehensive change		9. Learn and course correct	8. Pursue comprehensive change	3.2 Update SC performance measures and anchor the new behavior in the culture	3.2 Incentives/ rewards
		6. Outcomes				3.3 Institutionalize change
						4. Outcomes

Figure 2.
System description of
the change initiative
and related PMS

(5) The steps we strive to measure are originally based on the literature review. The final model was developed in close collaboration with the project management teams in the case organization. Thus, the intention of the CIMS is to measure and compare the different stakeholders' perception of all four steps in a change initiative (see Figures 4 and 5):

- change readiness (unfreeze) – divided into five sub-steps;

- implementation (move) – divided into four sub-steps;

- institutionalizing (refreeze) – divided into three sub-steps; and

- outcome.

(6) The intention is also to present detailed data/information on each step and the different dimensions of the sub-steps to selected stakeholders and finally to provide analysis and conclusions on the overall status.

For each of the four steps in the change initiative, the plan is to conduct two rounds of measuring. The first two measurement rounds measured the initial step: change readiness. Though the literature review did not result in any measurement systems for change initiatives, we found some studies focused on change readiness (Armenakis *et al.*, 2007; Holt *et al.*, 2007) or certain aspect of change in order to test different hypotheses in statistical models (e.g. Greer and Ford, 2009; van der Voet, 2015). Based on their indicators, we developed a first draft of our CIMS. We used three questions to capture the status of each sub-step. Some questions originated from, or were modified based upon requirements from the case organization. We used a seven-point Likert scale, ranging from strongly disagree to strongly agree, as response format.

In a collaborative manner during several meetings with the project management teams, the key stakeholders for this project were decided to be: management, supervision committee, project management and employees (future users). Although the core stakeholder groups were the same, exact definitions, size and constitution of the groups vary slightly between the two projects due to different project characteristics (Table III).

The Supervision committee for project α consisted of 26 members representing the different functions (road, rail, planning and maintenance) and geographical regions of the case organization. Project β had one steering committee (10 members) and another stakeholder group called activity committee with 11 members. These committees should receive information about the change initiative in order to provide structured feedback in planned meetings.

3.2 The implementation phase

The second phase in the performance measurement lifecycle is implementation. We implemented the system by collecting data in the form of web surveys. To date, we have conducted two rounds of measuring for both change initiatives. Survey I included background information on the respondents such as type of stakeholder and general view on personal readiness for change (see Appendix). The majority of the questions related to Change readiness/unfreeze while some related to implement/move. A few open questions were included in order for the respondents to be able to provide comments. The questionnaires were refined in several iterations in collaboration with the case organizations. We conducted a pilot test with three members of the project management team in α. To send out the surveys, we used an existing IT system the organization normally uses for internal web surveys. For the first change initiative α, Survey I was sent to 311 relevant respondents divided in the different stakeholder groups (see Table III) in October 2016. A reminder was sent out after 10 days, and after 20 days, the survey closed. We received 199 answers (64 percent response rate).

Survey I for change initiative β was developed in a similar manner but we also used the experience from α to facilitate the development. The survey was sent out to 882 respondents before the Summer holidays in 2017 with two reminders after the holidays. We received 515 answers (58 percent response rate).

We transformed the answers to different graphs ("a thermometer") in order to visualize the results. The graphs give stakeholders insights on how all stakeholder groups perceive the project in terms of change readiness (see Figure 3). The graphs also provide initial insights on the next step: implement.

More detailed graphs show the results for each sub-question (see Figure 4). The project management teams also received all detailed data, e.g. a system-generated report with statistics for each question as well as free text answers.

3.3 The use phase

The purpose of a measurement system is to provide relevant and actionable feedback to managers and other stakeholders in order to evaluate and improve their processes. Neely *et al.* (2000) argue that this step is seldom developed. In this study, we addressed this third phase in the PMS lifecycle. The analysis and the resulting feedback was conducted at different levels such as the implications for each change initiative, implications for the measurement system, "higher level" learnings for the case organization and evaluation of the overall research project. In short, the analysis was conducted in three steps.

First, the researchers sent the results (graphs and reports) as well as the raw data to the project management teams. Second, the initial analysis of the data was conducted by the two researchers – first individually and then combined. Simultaneously, the project management team conducted their own, independent analysis. Third, in a collaborative

Case α	Case β
Management (27 persons identified)	Management (64)
Supervision committee (26)	Steering committee (10)
	Activity committee (11)
Project management team (9)	Project management team (8)
	Sub project participants (9)
Future users (249)	Future user (771)
Total identified stakeholders 311	Total identified stakeholders 882
Response Rate I: 199/311 (64%)	Response Rate I: 515/882 (58.4%)
Response Rate II: 168/354 (47.5%)	Response Rate II: 422/873 (48.3%)

Table III.
Stakeholder groups in the change initiatives

Change readiness/unfreeze

Clear vision/goal of change

manner, we then met to discuss the results as well as the implications for the project, the case organization and the measurement system.
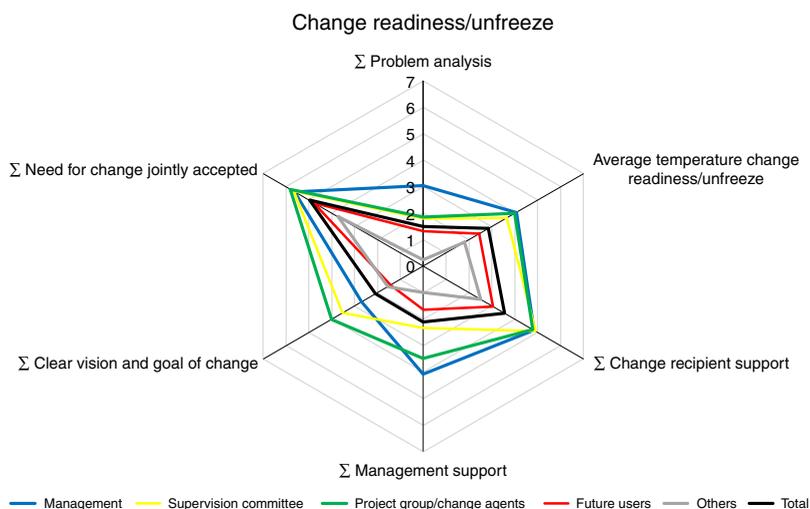
Survey I provided a snapshot of the existing situation regarding step 1 – change readiness. An interesting observation is that the results were similar for both change initiatives. There was a relatively strong support among different stakeholders for change and a supportive environment and culture for change. However, most other indicators for change readiness were weak in both change initiatives. Specific issues included a weak problem analysis, goal development, project priority and project awareness. The last issue was especially noticeable for the end users. In general, most of the barriers for change initiatives listed in literature were visible and thanks to the measurement model, the

project management team understood, early in the implementation, that they had not properly addressed the issues.

Top management support, for example, is another aspect which is identified in theory as one of the most critical success factor for change initiatives (see e.g. Näslund, 2013). The measurements signaled significant problems with top management support. First of all, the results indicated that top management did not consider themselves being truly supportive of the change initiative. Second, the project management teams were hesitant in terms of how they perceived top management support. This is a major problem for the change initiatives. Even more troubling is that the supervision committees considered the top management support to be significantly lacking.

The analysis of the results provided several "aha – moments" for project management. We discussed corrective actions to improve the information to the end users. Focus was on communicating the vision and goal of the change as well as the underlying problem analysis (which, in itself, could have been improved). Such communication can decrease the potential level of resistance but also increase support. We also found that there has to be communication "up" in the case organization, as top management clearly was not very well aware or supportive of the change initiative and its potential implications. Similarly, as a result of the survey, it was decided that the project sponsor (management) have to be more involved in terms of actively supporting the projects.

For both change initiatives, a brief summary of the measurement results, and main findings of the analysis, was sent out to all respondents. For the second project β, we also posted a brief article on the intranet. The project teams conducted workshops to communicate the results and to discuss the impact.

3.3.1 Implications for the measurement system. The measurement system works better than expected. The system provides snapshots of the existing situation and with Survey II, we could also identify both positive and negative developments. Survey II was sent out in November 2017 (α) and in April 2018 (β) (Figure 5).

In an ideal situation, there would be improvements based on actions taken from the analysis of Survey I. Even though the actual results for the change initiatives were mixed, the project teams were very satisfied with the system itself. One project manager said
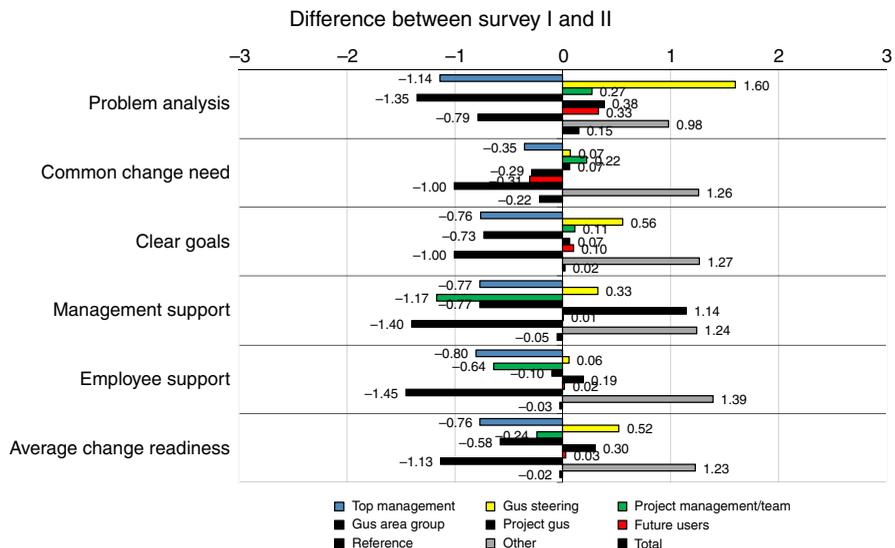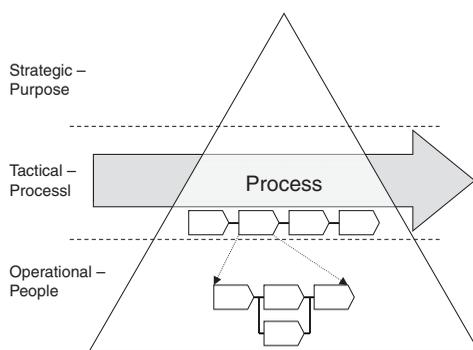

Figure 5.
Changes in perceptions between Survey I and II for β

"it provides evidence, it confirmed my gut feeling" in response to the decreased lack of top management support for β. We also saw positive aspects such as increased project awareness due to the information campaign after Survey I. This aspect resembles the cost of quality approach where issues can be addressed before they become significant problems. In short, the system captures the temperature of the change initiative at various stages and it also highlight positive and negative developments.

3.3.2 "Higher level" learnings for the case organization. We have had several presentations for the HQ. In May 2018, we presented the results and the analysis to the top management group at HQ. Focus was on higher level learning for the case organization. Significant research exists regarding critical success factors for change initiatives (see e.g. Näslund, 2013). One framework to classify success factors for change initiatives is the purpose, process and people (3P) framework (see Figure 6).

The purpose has to be clear, there has to be a burning platform and top management has to fully be behind and support the initiative in order to give it a high probability of success. The organization has to be ready for change. Process refers to more "hard" aspects of the change such as structure, maps, resources, etc. People refer to the more "soft" aspects of change. While all the aspects are important, properly working with purpose aspects is most probably required before organizations can deal with the process aspects. Similarly, while nobody would question the importance of people in change management, one could also argue that it is easier to get employees to buy into a change project if they fully understand the nature of the change. A clear purpose, and a solid approach to the process aspects, could facilitate buy in from employees. Thus, the 3Ps, to some extent, work as predecessors with a strong recommendation to focus on the purpose and process aspects in order to get the people aspect to work.

Using this framework to analyze the case organization, we realized that they lack in the purpose category – problem analysis, goal development and top management support. In discussions with both project groups and with HQ, additional problems were identified. They have a silo mentality in how projects are developed, prioritized and managed. As a result, too many projects are started but far from all are finished. They furthermore lack in how they monitor project progress and how to allocate and reallocate resources depending on project progress. As a conclusion, the measurement system highlighted several issues and in discussions we could identify root causes which explain these issues. Thus they need to work with more structural aspects which they may have suspected before the measurement system. However, now the issues are explicitly confirmed.

Strategic –
Purpose

Tactical –
Processl

Process

Operational –
People

Source: Based on Näslund (2013)

Figure 6.
3P model for critical
success factors

3.4 The maintain phase

The final stage of the lifecycle of a PMS is to continue develop the system. In this research project, the CIMS was first refined between the two rounds of measuring the step "unfreeze/change readiness." Based on analysis, feedback and in collaboration after Survey I, we did some minor adjustments to the system. The results and analysis furthermore highlighted certain additional aspects that could be addressed in the next version, e.g. the need for improved communication and the need for increased top management support. The CIMS will be further implemented when we measure the steps "implementation/move" and "institutionalize/refreeze."

4. Evaluation of research

In order to evaluate the overall AR project, it is important that all parties involved are satisfied with the results and the nature of collaboration. In this project, we have followed all four phases in the PMS lifecycle. The measurement system was developed, implemented, used and maintained in close collaboration with the case organization. We have followed AR philosophy with several loops of action, reflection and new action. Results, impacts and reflections were discussed in several meetings and feedback has been sent out to respondents.

We also evaluated and analyzed on a "higher" level what the case organization can learn from this measurement system in order to improve how they work in change initiatives. The research project highlighted issues of a general nature, and, thus, there may be lessons learned for other change initiatives in the organization. These issues include improved focus on change readiness such as a better problem analysis and goal development before launching an initiative– issues related to the purpose of our 3P framework for a successful change initiative.

Other aspects are efforts to truly secure top management support (e.g. resource commitment and an active sponsor before and during the launch) and a communication plan both up and down the organization. These aspects also relate to the Process and People aspects in our framework. Furthermore, the measurements in itself as well as communication of the results may increase awareness of the change initiative and thus, potentially, decrease resistance. These lessons for a generic change initiative thus primarily include activities conducted in advance to minimize and correct potential problems. They reinforce the importance of a properly-defined purpose and of change readiness according to the change management theory.

4.1 Rigor, validity and future research

A criticism of AR is that it more resembles consulting, rather than rigorous research (Baskerville and Wood-Harper, 1996; Gummesson, 2000; Coughlan and Coghlan, 2002). Ozanne and Saatcioglu (2008) add other criticisms, such as inappropriate application of methods, poor training of researchers, inadequate time in the field, weak research relationships and shallow participation. Researchers must therefore diligently address these dimensions when reporting their use of AR for publication purposes. Furthermore, by discussing its particular strengths, such as the extreme relevance and unique access, and how the research project approaches issues of rigor and quality, we can increase the appreciation for AR (Coughlan and Coghlan, 2002; Näslund, 2008; Ozanne and Saatcioglu, 2008).

Romano and Formentini (2012) refers to Levin (2003), who proposed four criteria for evaluating AR quality. First, in terms of participation, our research reflects the close interaction developed with the case organization. Second, the research was inspired by a real-world problem related to organizational change. Third, the research has followed a collaborative, cyclical process with regular meetings between researchers and organizational members in order to develop the measurement system and to analyze and reflect on results and actions. Furthermore, AR issues "warrants for action" as the participants have been active in defining the existing problems and steps required to deal

with the problems. Finally, the research has resulted in a workable solution – a measurement system which has been implemented and analyzed.

Future research will include more rounds of measuring in the existing case organization to further develop and refine the measuring system. We also want to implement and test the system in other organizations in different industries. Finally, another avenue to explore is to conduct statistical tests and analyses when we have implemented the system in other organizations.

5. Concluding discussion

The review of literature indicated a lack of empirical articles dealing with implementation, use and evaluation of PMS. The systems described in conceptual articles do not seem to truly exist in practice. There is a gap between academic ideas and practical reality. Furthermore, PMS is not an established academic discipline and thus the theoretical foundation is weak.

In this project, we have designed a PMS for change initiatives based on existing theory, we have implemented and used a first version of the PMS in close collaboration with the case organization, as well as evaluated the results to maintain it. We have identified corrective actions and we have analyzed the lessons learned on a higher, more generic level for the case organization. These lessons, primarily related to change readiness and Purpose in our 3P framework, largely focus on activities conducted in advance in order to reduce future change management problems. Following the tradition of AR, our research has contributed both to science and to practice. From a practical perspective, the case organization has a system they can use to measure change initiatives. From a research perspective, we have conducted an empirical, longitudinal study of all phases in the performance measurement lifecycle and that we have performed a robust analysis as well as rigorously described all aspects of the study. Given the lack of such studies, this is a major contribution to existing measurement literature.

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Appendix. Web-survey questions change readiness/unfreeze (translated from Swedish)

Background data

1a. Which business unit do you primarily represent?

☐ Planning

☐ Maintenance

☐ Other

1b. Which region do you belong to? (If you belong to Planning you should choose region)

☐ South

☐ North

☐ East

☐ West

☐ Mid

☐ Stockholm

☐ National

1c. Which division do you primarily represent? (If you have chosen maintenance you should choose division)

☐ Rail systems

☐ Road systems

☐ Business Control

1d. Which is your relation to the project "System Support Planning"? [internal name for the Chainge Initiative, later abbreviated CI SSP in this appendix to the article]

☐ Management (Steering Committee or closest manager to member in the project team)

☐ I am member in the Supervision Committee

☐ I work in the Project team

☐ Future user

☐ Other (what?)

General view on change

2a. What is your perception of your general interest of changing?

	1	2	3	4	5	6	7			
Very low	☐	☐	☐	☐	☐	☐	☐	Very high	Don't know	☐

2b. Which of the following roles do you most frequently take in change initiatives?

☐ Champion (in general positive and pro-actively drive changes)

☐ Ambassador (in general positive to change, but do not drive them)

☐ Challenger (in general hesitant to changes but do not counter work them. I ask critical questions and search facts to better understand)

☐ Neutral (I do not see benefits of change, and do not engage: neither pro or against)

☐ Negative (hesitant to change and not seeing any benefits: I counter work them)

☐ Other (what?)

☐ Don't know

To what degree, based on your knowledge or the communication you received, do you agree on the following statements?

[Scale: (1) No/to a very low degree; (7) Yes/to a very high degree: Don't know

Need for change and clear goal

3a. We need a new tool to more effective work with X *[In this project X was replaced with "planning, steering, ordering and control of provisions"] [Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

3b. I believe the change will improve our X. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

3c. The system, and the changes in the work processes it brings, are important for our organization. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

4a. Did the management evaluate the existing solution regarding X prior to setting goals for the change? *[Compare Greer and Ford, 2009]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

4b. Fact-based data was used to identify the need for change of X? *[Compare Greer and Ford, 2009]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

4c. The gap between "where we are" and "where we want to be" for the new system was determined? *[Compare Greer and Ford, 2009]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

5a. There is a clearly formulated goal (futures state) for how the new system should work.

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

5b. The desired result after the implementation of the new system is clearly described.

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

5c. The goal (future state) of what changes the new system should bring has been clearly communicated.

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

Implementation

6a. The management clearly supports the work with the new system. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

6b. My immediate manager encourages me to support the changes the new system brings. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

6c. Management contributes to the progress of the project. *[Suggested by the case organization as response to literature based suggestions]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

7a. [The case organization] has the capability to successfully implement the change. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

7b.The change the new system will bring will benefit me personally in my work. *[Compare Armenakis et al., 2007]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

7c. I personally do what I can to contribute to the project moving forward . *[Suggested by the case organization as response to literature based suggestions]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

8a. I know that there is an implementation plan/time plan for the change. *[Compare Greer and Ford, 2009]*

	1	2	3	4	5	6	7			
No, to a very low degree	☐	☐	☐	☐	☐	☐	☐	Yes, to a very high degree	Don't know	☐

8b. Do you consider that the project team handles the existing implementation problems?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
No, to a very low degree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Yes, to a very high degree   Don't know ☐

8c. Do you consider the project (change initiative) well communicated?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
No, to a very low degree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Yes, to a very high degree   Don't know ☐

9a. Do you find a clear implementation organization?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
No, to a very low degree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Yes, to a very high degree   Don't know ☐

9b. Do you consider that the change project has enough with resources.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
No, to a very low degree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Yes, to a very high degree   Don't know ☐

9c. There are to many competing projects to leave enough time and resources on this.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
No, to a very low degree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Yes, to a very high degree   Don't know ☐

Other questions

10. Do you know to whom you should turn if you have questions regarding SSP?

☐ Yes

☐ No

☐ Comments::

11. Do you think you get the information you need about the project?

☐ Yes

☐ No

☐ Comments::

12. Is there something you would like to add or make explicit?

☐ Yes

☐ No

☐ Comments::

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