Performance measure review practice in heavy automotive industry – a dual perspective case study

1. Introduction

Within the field of performance measurement and management (PMM) it is well-established that more research is needed into understanding how change is managed in performance measures (PM) (Eccles, 1991; Ghalayini and Noble, 1996; Neely, 1999; Kennerley and Neely, 2002; Kennerley and Neely, 2003; Melnyk et al., 2004; Neely 2005; Bourne, 2008). Even though academics have risen to the challenge by proposing several performance measurement frameworks (Bititci et al., 2000; Bourne et al., 2000; Najmi et al., 2005; Kennerley et al., 2003) two shortcomings prevail in the contemporary thereotical base. Firstly, little research has focused on the applied practices of organisations in the industry for managing change. Secondly, the research available today takes on a management perspective rather than an organisation-wide equivalent. This has been acknowledged by Bourne (2008) that underlines the need for more collaborative research into understanding how organisations manage change in PM in practice.

With these deficiencies in mind, the purpose of this paper is firstly to outline the PM review practice of an organisation within the heavy automotive industry from two perspectives, top-management and operational, and secondly to contrast the practice to theory. In order to do this, two case studies at one case company have been executed, one from each perspective. The heavy automotive industry, defined in this paper as the industry for buses, trucks, and construction equipment, is both interesting and appropriate to study in relation to the outlined phenomenon. The industry is highly competitive and sensitive to changes in external environments. This combination puts high demands on the flexibility of the performance measurement systems (PMS) as companies are pressured to continuously exacerbate their indigenous competitive edges while simultaneously recurrently adjusting to changes from an exogenous and volatile market. The PM review process is important for heavy automotive organisations due to the highly dynamic and globalised environment that they operate within. It provides top-management with the ability to quickly re-arrange decisions, PM and priorities in tandem with the environment in order to ensure that the organisation continuously steers towards its strategic goals.

The need for flexibility became distinctive during the latter half of 2008 as several heavy automotive organisations in Sweden realised that they lacked the capability to manage change in their PMS. As an economic boom was rapidly replaced by a financial crisis with severe global repercussions, the organisations witnessed how record-breaking order intakes and production output were promptly substituted by negative order intakes and plant closings. Strategic objectives and investment initiatives solely purposing to increase occupancy rates, production output and capacity needs were, overnight, replaced with large-scale redundancy notes, cost cutting programmes and heavy decline in market demand. The unforeseen and extreme market conditions rapidly altered the business environment of these organisations. The performance measures deployed when the occupancy rates were high became inappropriate and irrelevant when the factories struggled to stay open. Managers and employees alike realised that their organisations did not possess the capabilities to revise their PMS and replace obsolete measures.

A situation arose in which manufacturing units in dire need to quickly rearrange priorities and focal points stood without means to make it happen. Management teams and production supervisors were dispossessed of performance follow-ups as measures became obsolete and did neither reflect the business objectives nor the current business environment. Once these

organisations had revised their PMS, in an ad-hoc and resource consuming fashion, to reflect the new reality, the global economic recovery late 2009 changed the premises for production once again (Figure 1). With souring demand, cheap attainable capital and rapidly rising order intakes the focus of general management shifted from cost to delivery. The newly revised PMS, based on premises that factories struggled to stay open were once again need of revision. Today these companies find themselves on unchartered waters with increasing downward pressure on actual and forecasted output due to the financial uncertainty that is mounting globally. The slow recovery of the US economy, the attempts to cool down the Chinese economy and the unclear fate of both the European Union and European Monetary Union have accumulatively added up to a highly volatile environment for companies and customers alike. Due to the current state of affairs, once again, these companies have been forced to adjust their PMS in order to reflect the reality that they operate within.

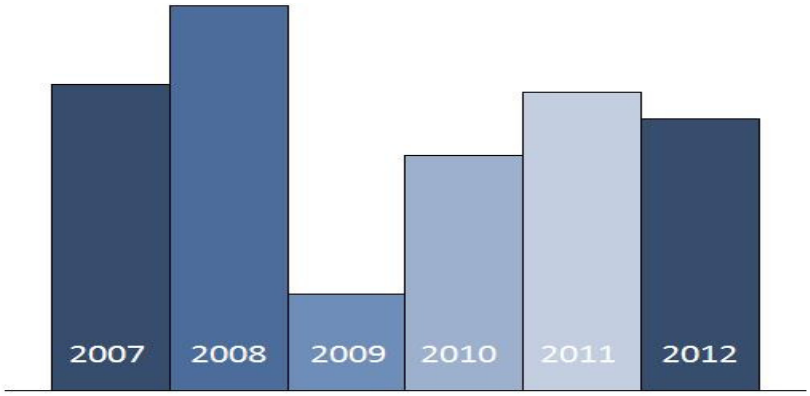

Figure 1: Illustration of the volume development over the period 2007-2012.

This paper is divided into five sections. The following section presents a literature review on the concurrent PM review frameworks, concepts and models. The third section introduces the applied method and the two case studies. The fourth section of the paper outlines the empirical findings by presenting the case company's review practice from both the management and operational perspectives. The succeeding section then contrasts and discusses the empirical findings to their theoretical dittos. The last section concludes the findings, discusses the necessities of the future research agenda and highlights the contributions of the paper.

2. Literature review

The life-cycle of a PMS has typically been divided into four phases (Bourne et al., 2000; Neely et al., 2002b; Bititci et al., 2004; Searcy, 2011). The initial phase deals with the design of the PMS. The second phase revolves around the implementation of the system. The third phase deals with the management of the PMS. And, finally, the concluding phase handles the evolution of the system; how do we ensure that we keep the PMS relevant over time. From the end of the 80s, the majority of academics within the field were dedicated to confronting the challenge of what organisations ought to focus on measuring and the initial phase of the PMS life-cycle. In the wake of the rise of Japanese manufacturing, Western manufacturers stood before a painful examination of their practices and perception of performance (Ghalayini and Noble, 1996; Radnor and Barnes, 2007). In a bid to regain the competitive edge, the sole focus on efficiency was replaced with a more balanced approach to performance, with equal emphasis on both efficiency and effectiveness. Consequentially, a wide range of PMS addressing the needs of the new age was introduced (Keegan et al., 1989; Kaplan and Norton, 1992; Lynch and Cross, 1995; Rolstadås, 1998; Medori and Steeple, 2000). As a result of this, the field of PMM today is well-filled with guidelines addressing how to design the appropriate PMS (Paranjape et al., 2006). What has been less examined is the final phase of the PMS life-cycle, the challenge of evolving

the PMS and ensuring that it remains relevant over time (Neely, 1999; Kennerley and Neely, 2002; Kennerley and Neely, 2003).

The necessity of keeping PM relevant over time originates from the need for a PMS to comply with the strategic direction and both the internal and external environments of the organisation (Kaplan and Norton, 1993; Neely et al., 1994; Lynch and Cross, 1995; Bourne et al., 2000; Cokins, 2004; Melnyk et al., 2005; Kaplan and Norton, 2008; Lima et al., 2009; Srimai et al., 2011). This necessity has increased lately due to increased global competition (Rolstadås, 1998) and complexity in supply-chains (Allesina et al., 2010). The link between PMS and strategy is powerful if achieved, creating alignment between the two components will provide information on whether the strategy is being implemented and encourage behaviours consistent with it (Neely, 1999). Thus, PM does not operate in a vacuum; rather, they are heavily influenced by the strategic context of an organisation that is inherently dynamic. Within a given PMS, there are measures that are indeed indispensable. However, within the same PMS, a considerable amount of measures are of temporary nature. Once the objective, failure or problem behind a PM is redeemed, it should be abolished. Further, even indispensable measures should be recurrently updated and fine-tuned (Neely et al., 2002b). In order for the PMS to be dynamic and continuously reflect the environment, capabilities need to be in place to systematically review and update the PMS. Since Eccles (1991) highlighted the need for companies to keep their PMS up to date the interest among academicians for the evolution phase of the PMS life-cycle has increased. Several frameworks, concepts, models and investigations have emerged addressing how to manage change in PM and the factors affecting it. These are addressed in the remaining part of this section.

2.1 Review process

Feurer and Chaharbaghi (1995) argue that due to the dynamic environment that organisations exist within, a continuous process for PM selection must exist. Cross and Lynch (1988) concurs and argues that a PMS need to be sensitive to the business and organisation´s future performance requirements. Neely et al. (2002b) argues that a process needs to be in place in order ensure that temporary PM are abolished and indispensable PM are fine-tuned. For this purpose, an audit with 10 questions is provided within their Performance Prism framework in order to establish if a PM is outdated or still relevant. Kennerley and Neely (2002; 2003) and Kennerley et al. (2003) list the review process as one of four critical factors in their framework for keeping PMS up to date. They argue that a process is needed that reviews, modifies and deploys PM over time. Wisner and Fawcett (1991) highlights, in the last step of their flow diagram for an effective PMS, the need for a periodical revaluation of the appropriateness of the established PMS in the view of the current environment. Medori and Steeple (2000) concurs and lists periodic maintenance as the last step in their framework for auditing and enhancing PMS. They argue that the last stage in the framework revolves around periodically reviewing the company's PMS because PM relevant at one particular moment in time may become redundant at another point. Dixon et al. (1990) highlights the need for a process for changing PM in their performance measurement questionnaire tool (PMQ). The PMQ is a questionnaire consisting of four parts that allows respondents to gauge improvement areas, performance factors and personal performance measures. The idea is to compare results from the various functions and management levels of an organisation against each other using four statistical tools; alignment, congruence, consensus and confusion. The statistical results are then used as input for an evaluation meeting among the functions that purposes to foster commitment around necessary changes of the PMS and develop an action plan for these changes. Neely et al. (2002a) argues that as PMS are often allowed to expand to the extent that they become unmanageable a process responsible for reviewing the PMS needs to be in place. Moreover, it is underlined that the review process often is tied to the budget or strategic cycle and that the understanding of the process evolves over time for organisations. Ghalayini et al. (1997) have developed a framework

labelled IDPMS (Integrated Dynamic Performance Measurement System). IDPMS combines three existing tools to integrate management, process improvement teams and the factory shop floor. In the framework the management determines the areas of success. The process improvement teams focuses on improving performance and continuously updating the performance standards for the factory shop floor. The factory shop floor collects and analysis data for day-to-day decision making. The tools used in this model are the PMQ (Dixon et al., 1990), the half-life concept and the MVFCT (modified value-focused cycle time). Bourne et al. (2000) supports and develops earlier findings by arguing that in order to continuously update PMS in manufacturing companies, four processes need to be in place:

- A process to review targets of current measures.
- A process to review current measures.
- A process to develop new measures.
- A process to challenge the strategy.

Kaplan and Norton (1996) highlight the need for a learning and feedback process when transforming first generation balanced scorecards (BSC) into strategic management systems. The BSC originators argue that such a process allows the evaluation and modification of strategy, objectives, and performance measures and makes the PMS double-looped. Najmi et al. (2005) lists a process consisting of three review levels (overall, periodic and ongoing) as central components in their PMS review framework. Firstly, the overall review assesses the validity of the mission, vision and strategic objectives. Secondly, the periodic review evaluates the overall performance at a strategic level. Thirdly, the ongoing review ensures that organisational processes are under control and achieving expected performance. Searcy (2011) has, from a sustainability perspective, developed a conceptual framework for structuring the process of reviewing and updating a corporate sustainability PMS. The framework consists of three fundamental steps: (1) planning for an assessment, in terms of scanning, scoping and planning; (2) conducting an assessment by preparing and assessing the PMS on different levels and life-cycle perspectives; and, (3) following up an assessment by developing and implementing recommendations. Bititci et al. (2000) highlights in their dynamics PMS model that a review mechanism is needed which uses the performance information provided by the internal and external monitors and the objectives and priorities set by higher level systems to decide internal objectives and priorities must be included. Moreover, in connection to the review mechanism, a deployment system is needed which deploys the revised objectives and priorities to business units, processes and activities using performance measures is required. Meekings (2005) have developed a set of requirements for a functional review process. Firstly, it needs to be structured properly, secondly it needs to be connected throughout the organisation, thirdly it needs to be ensured that the review meetings deliver value in their own right and finally the implementation needs to be tackles in a manner that paves the way for sustainable use.

2.2 Culture

A recurring catchword deployed intensely by academicians and practitioners alike is culture. As formulated by Schein (1992), the culture of a group can be defined as *"a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems"*. Within change management literature, organisational culture is frequently emphasised as critical for the success of change initiatives (Mabin et al., 2001). Waggoner et al. (1999) underline the impact that organisational culture can have on PMS evolution. They argue that a culture which discourages risk taking and innovation can block steps that are essential for the successful change of a PMS. Kennerley and Neely (2002; 2003) concur and underline the need of a culture within the organisation that ensures that the value of measurement, and importance of maintaining relevant and appropriate PM, are appreciated (Table 1). Salloum and Wiktorsson

(2011) argue that in order to realise a dynamic PMS, a culture is needed that encourages organisational involvement, openness, information sharing and resource availability. Farris et al. (2011) confirmed the findings of Franco and Bourne (2003) in their investigation of the PM review process regarding the need to develop a supportive organisational culture. Two critical factors were identified: employee empowerment (including focus on teamwork, ownership of problems, participation and entrepreneurship) and a focus on continuous improvement.

Table 1: Barriers and enablers for culture (Kennerley et al., 2003).

Culture Barriers to Measures Evolution	Culture Enablers of Measures Evolution
• Management inertia towards measures due to other priorities • Ad hoc approach to measurement • Measures not aligned to strategy • Actions not aligned to measures • Lack of management concern for non-investor stakeholders	• Senior management sponsorship • Consistent communication of multidimensional performance to staff • Open and honest application of measures • No blame / No game environment • Integration and alignment of reward systems

2.3 Management

Waggoner et al. (1999) highlight the importance of management in their framework of forces impacting PMS evolution and change (Figure 2). The framework highlights the pivotal role that management plays from several perspectives, such as top-level support, internal influence, process, and transformational issues. Searcy (2011) underlines the influence that senior management plays in the framework for structuring the evolution of a corporate SPMS. In order to succeed with the implementation of changes, senior management must ensure that their support is apparent, their expectations clear, and that the appropriate human, technological, and financial resources are available for facilitating change. Kennerley and Neely (2002; 2003) argue that management commitment and training are two factors needed in order to facilitate PMS evolution. Further, Kennerley et al. (2003) highlight the risk of management inertia towards PM as a barrier for evolution. Moreover, recent empirics show that situations can arise in which managers use familiar measures to shape higher objectives (rather than vice versa) due to the fear of deploying new, unfamiliar measures (Melnyk et al., 2005). And in some cases, managers see and realise benefits from the misalignment between measures and strategy. Such benefits can include the enhancement of career benefits, the justification of poor performance, more resources, and increased control over activities (Pongatichat and Johnston, 2007). Moreover, in an empirical study conducted at a large manufacturing unit, it was concluded that management commitment, style, competence and politics are factors that clearly impact on the dynamic abilities of a PMS (Salloum and Wiktorsson, 2011).

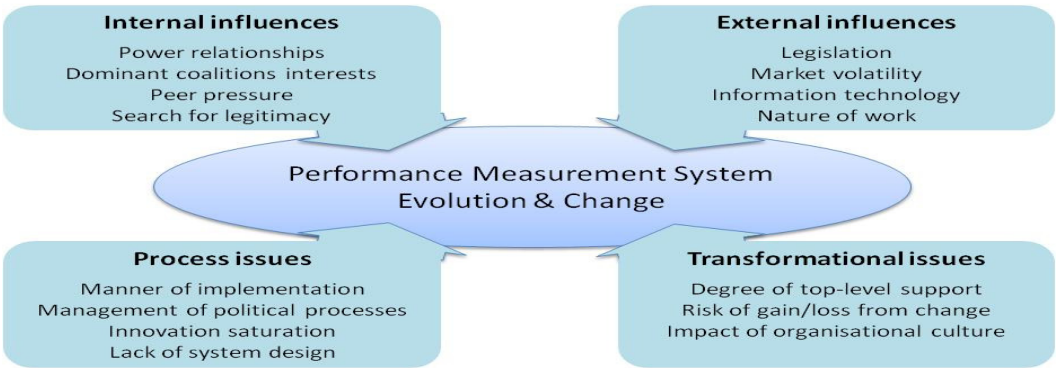

Figure 2: Factors for evolution & change of a PMS (Waggoner et al., 1999).

2.4 IT-capabilities

Kennerley and Neely (2002; 2003) stress the availability of flexible information technology to enable the collection, analysis and reporting of appropriate data as crucial for the evolution of a PMS. Moreover, Kennerley et al. (2003) list barriers and enablers for IT-capabilities, as illustrated in Table 2. Wettstein and Kueng (2002) argue that IT capabilities are one imperative for initiating and accelerating PMS change. They argue that IT consistently offers new opportunities to automate processes, enhance communication, and develop data analysis sequences. In the integrated model forwarded by Bititci et al. (2000), the required capabilities for dynamic PMS are divided into two categories, framework capabilities and IT platform capabilities. For the IT platform, four requirements were identified:

- Able to provide an executive information system.
- Capable of accommodating and incorporating all the elements of the framework.
- Integrated within the existing business systems.
- Capable of handling simple rules, such as alarms and warning signals, to facilitate performance management.

Table 2: Barriers and enablers for IT systems (Kennerley et al., 2003).

System barriers to Measures Evolution	System Enablers of Measures Evolution
• Inflexible legacy systems • Poorly or partially implemented ERP systems • Difficult to tailor 'off-the-shelf' performance reporting software • Poor use of graphical representation • Excess of raw data	• Investment in IT hardware and software • Data mining / warehousing capability • Readily customisable information systems • Internal systems development and adaptation capability

2.5 Synthesising the literature

Several prominent academics within the field have divided the PMS into a life-cycle consisting of four phases. Within this view, the PM review practice is placed within the concluding life-cycle phase of evolution. Moreover, even though most frameworks listed in Table 3 highlights the need for a review process no consensus exists regarding how such a process ought to be designed. The frameworks listed in Table 3 ranges from mentioning the need for a review process (Wisner and Fawcett, 1991; Medori and Steeple, 2000) to literature studies (Waggoner et al., 1999) and conceptual models (Searcy, 2011). Some frameworks (Kaplan and Norton, 1996; Neely et al., 2002a; Bititci et al., 2000; Bourne et al., 2000) elaborate on the responsibilities of such a process but provide little direction on how it might take shape in practice. Others (Dixon et al., 1990; Kennerley and Neely, 2002; Najmi et al., 2005) debate and argue more on the design by outlining important factors to consider, questionnaires to deploy and management tools to implement. However, these frameworks neglect the nature and context that PM operate within in manufacturing organisations. PM are deployed across whole organisations, from executive management teams to shop-floor teams, often in the shape of a pyramid. That is, the further down in the organisation you look, the more PM you will find in need of review. Hence, any practically functional review process needs to take a wide perspective in the design phase and incorporate the whole organisation, including the teams at the first hierarchical level. Moreover, as a considerable portion of PM deployed often are cascaded top-down through the organisation a review process need to be interlinked and chronologically executed. This aspect is also broadly neglected in the frameworks presented in Table 3. The frameworks appear to take a management perspective rather than an organisational perspective to the review of PM. Moreover, PM works in open production systems, heavily influenced by their temporal, cultural and social contexts. Further, in practice, PM are surrounded by a considerable amount of contingency (Bauer et al., 2004; Tangen, 2005).

Thus, the final applicability and functionality can depend upon a number of factors beyond the need of having a review process in place. However, as made evident by Table 3, little research has extended beyond the actual review process. Only two frameworks (Kennerley et al., 2003; Waggoner et al., 1999) take a wider approach by incorporating a discussion regarding the factors that enable and inhibits the challenge of managing change in PM. However, it needs to be underlined that the Kennerley et al. (2003) framework is developed through a literature study and management interviews exclusively, thus through a narrow approach not appropriate for an organisational-wide phenomenon. Further, the Waggoner et al. (1999) framework is based on a literature study without any empirical validations. In regards to the purpose of this paper the theoretical foundation is limited. None of the previous publications neither illustrate how PM change is managed in practice nor takes an organisation-wide perspective. Hence, no single framework can be chosen to be contrasted with the empirics. Instead, the empirics will be put in juxtaposition to the whole theoretical foundation of the paper and discussed from the perspective of commonalities and divergences.

Table 3: Synthesising the content of the frameworks

Framework	Reference	Review Process	Culture	Management	IT-capabilities
The dynamic performance measurement systems model	Bititci et al. (2000)	X			X
A framework of phases in developing a performance measurement system	Bourne et al. (2000)	X			
The performance measurement questionnaire	Dixon et al. (1990)	X			
The Integrated Dynamic Performance Measurement System	Ghalayini et al (1997)	X			
The Balanced Scorecard	Kaplan and Norton (1996)	X			
Framework of factors affecting the evolution of performance measurment systems	Kennerley and Neely (2002; 2003), Kennerley et al. (2003)	X	X	X	X
A framework for auditing and enhancing performance measurement systems	Medori and Steeple (2000)	X			
Performance Measurement System Review Framework	Najmi et al. (2005)	X			
The Performance Prism	Neely et al. (2002b)	X			
A framework for structuring the evolution of a corporate SPMS	Searcy (2011)	X		X	
Framework of impacting forces of performance measurement system evolution and change	Waggoner et al. (1999)	X	X	X	X
A Maturity Model for Performance Measurement Systems	Wettstein and Kueng (2002)				X
The Cambridge Performance Measurement Framework	Neely et al. (2002a)	X			
The Performance Pyramid	Cross and Lynch (1989), Lynch and Cross (1991)	X			
Effective Performance Measurement System	Wisner and Fawcett (1991)	X			

3. Method

In order to fulfil the purpose of the paper, the data presented has been collected through the execution of two case studies, one from a top-management perspective and one from an operational perspective. The choice of case studies as means for data collection stems from the possibility of an in-depth and holistic examination of the formulated phenomenon, as argued by Bell (2000) and Merriam (1994). The units of analysis in both cases have been the way of working for managing change in PM. The unit of analysis is according to Yin (1994) what defines a case study, thus what to be studied. The case company is located in Sweden and operates within the heavy automotive industry. The site where the case study was executed is one of the company's four manufacturing units in Sweden. However, the industrial footprint is global with operations spread out worldwide. As outlined in section two of the paper, little of the literature available today takes an organisation-wide perspective to the management of change in PM.

The intentions behind the combination of two case studies with different approaches at the same case company are dual. Firstly, to take a wider perspective than previous research by weighting the perception of top-management and the whole organisation. Secondly, to generate an understanding of how the phenomenon of change in PM is actually managed in practice. This is imperative for the quality of the conducted research as the studied phenomenon, as mentioned earlier, is not confined to one hierarchical level but deployed organisation-wide. The choice of case company was guided by several factors. Firstly, it was pivotal to find a case company that was deemed representative by the researcher for the heavy automotive sector in Northern Europe. Secondly, the unrestricted access to interviewees and databases also played an important role in the decision-making. Finally, the knowledge that the researcher possessed about the case company´s PMS and practices also played a pivotal role when deciding on the case company. In order to ensure comparability, the case studies were executed in an overlapping manner. However, the case study on the management perspective was both initiated and finished before the equivalent on the operational perspective.

3.1 Case Study A: the top-management perspective

The whole management team of the case company were interviewed. In total ten managers from seven functions (plus the site manager): production (three managers, one for each product line), finance, production engineering, HR, logistics, maintenance and quality. Each interview consisted of a set of open, semi-structured and structured (questionnaire) questions. The open questions sought to generate an understanding of how each interviewee perceived the PMS, the way of working for keeping it up to date and its closely correlated systems and processes. The systems and processes consisted of ERP systems, data warehouse systems, production control and strategic control processes. The semi-structured questions were designed to generate an understanding of the qualities of certain characteristics of the PMS and the work of keeping it up to date. The questionnaire sought to gauge how well the interviewees believed their organisation kept the PMS up to date. Each interview took between 40 - 70 minutes. Consistently throughout the study, the open questions consumed most time whilst the questionnaires were finished quickly. In addition to the interviews, the analysis of archived data and direct observations were also deployed for data collection. The analysis of archived data included financial databases, information systems, operational manuals and process documentation of the case company. The direct observations were applied consistently over the case study during factory tours, process introductions, and PM meetings.

3.2 Case Study B: the operational perspective

The second case study is an in-depth participative study running over a time period of nine months studying the PM review practice from an operative perspective. The empirical data acquisition was made through participative observations (such as problem workshops), direct observations (such as formal meetings), and informal discussions (such as group reflections between meetings and informal interviews). Moreover, material such as meeting minutes, emails, presentations, and personal notes were also used as empirical data. At the end of each day, the researcher had calendar time reserved for writing in a case diary. The content of the case diary was composed of analyses, constructions, personal reflections and thoughts regarding the progress of events, as advocated by Merriam (1994). The directions for the registration of information recommended by Taylor and Bogdan (1998) were applied to the highest possible extent in order to enhance the empirical collection. They were as follows:

- Be attentive and observant.
- Interchange between broad/narrow focuses.
- Be observant regarding key words and communicating.
- Concentrate on the openings/closings of sentences.
- Mentally recapitulate the progress of events.

3.3 Data analysis

In order to analyse the data in an established and adequate manner, two strategies were applied. The first was the strategy of pattern matching logic based on its appropriateness in case study research (Yin, 1994). Pattern matching contrasts patterns discovered in the empirics with their anticipated equivalents. The second was clustering as suggested by Merriam (1994). Clustering implies that findings that resemble each other are grouped in categories. Clustering can be done in several dimensions but regardless, the quest is to first group findings and then conceptualise resembling trends and qualities (Merriam, 1994).

For each case study, a designated folder was created for the storage of empirical material. Once a case was finished, all documentation related to the specific study was located under the case study folder. An anticipated pattern was created from the literature review during the construction of the interview questions in particular and data protocol in general. Before the data analysis began, a phase of data reduction was undertaken in order to separate relevant and irrelevant data. Relevance was decided partly from the applied theoretical lens and partly from the intuition accumulated during the actual execution of the case study. Then the data analysis of the interviews (Case Study A) and field notes (Case Study B) was initiated. The essential data from the interview and field note material was then clustered based on similarity. Once the interview and field note data was scrutinised, the data from the direct/participative observations and process/system documentation was analysed using the same procedure. Once the relevant data was sorted, the findings from each source were compared and synthesised until a pattern emerged.

3.4 Quality of conducted research

As advocated by Merriam (1994), three measures have been applied in order to ensure that the appropriate quality of the conducted research is attained: internal validity, external validity and reliability. In order to ensure internal validity, multiple data collection components were applied in each case study (in order to enable triangulation) (Voss, 2009). Moreover, all interviewees and workshop participants validated the transcribed interview/workshop results before analysis was initiated (Lantz, 1993). External validity had been preserved by a representative case company and describing the findings as abundantly as possible (Merriam, 1994). All documents related to each case study were stored in designated folders. All documents, from the initial emails to the concluding elucidations, were stored in the designated folders in line with the principles set by Yin (1994) regarding documentation. However, even though the reliability of the research has been considered, the extent to which the research results can be repeated needs to be clarified. Although it would be possible to duplicate the case studies to an arguably high extent, it must be remembered that organisations are systems in constant motion and evolution. The research results might be able to be reproduced in full if a case study were duplicated directly after it had been executed. However, with an increased time span, it would be difficult for other researchers to draw the same conclusions, even though the case studies are duplicated.

4. Case Study A: findings from a top-management perspective

4.1 The result plan process

From the analysis of archived process material it could be concluded that the process deployed for managing change in PM was labelled *the result plan process* in the case company. The process material was not obtained from one designated source but had to be compiled from multiple sources within the organisation. Moreover, the result plan process was not documented in the case company´s database for process descriptions and material. However, from the process material obtained it emerged that the vision of the result plan process was to foster result orientation and measurement culture within the organisation and to cascade and update goals

and measures regularly. The result plan process consisted of two pillars, the result plan and a meeting structure (Figure 3). The result plan is an Excel document that incorporates PM, objectives and actions for a given year and quarter. For each quarter, PM and goals were further decomposed into measurable tasks and actions. The result plan was individual on all organisational levels, except for production and cross-functional teams (where it was owned by teams). The cross-functional teams consisted of individuals from the quality, maintenance, production engineering and logistics functions that supported each product line. Both the process material and interview results highlighted that the result plan was meant to be used throughout the organisation, from top management to production teams and white collar departments. Each production team got the autonomy to select a considerable portion their own PM as long as they supported the overriding goals of the organisation. The site manager elaborated:

In our vision, everyone should be involved and contribute. This is a question about leadership and culture but also how we choose to work in the organisation… We need to involve the people doing the most value added work and are closest to the production processes in our work with KPI's…Some people might nag about the time that this way of working consumes but here we need to think twice because 800 brains do it better than eight or nine.

We in the management team can´t tell people what to measure because we don't know about all their challenges and problems. Even if we knew all about it [challenges and problems], it would be counterproductive to throw KPI´s at them because they will own and act on them…Yes, certain KPI's needs to be everywhere but the rest are up to them as long as they take on the responsibility and progress is made.

Several managers (HR, finance, production, quality, logistics) echoed the thoughts of the site manager, they believed that the local expertise of the production teams would enable the organisation to develop better and more accurate PM that would lead to greater improvements and performance results further down the road. One interviewee argued that the intention was, besides changing and cascading PM, to use the result plans as a tool to delegate the ownership of measures. Having PM on your result plan constituted the responsibility for reporting the weekly follow up, reaching the target and reacting on deviations with actions and tasks. The underlying idea was that by giving these responsibilities, the owner of the measure had an incentive to ensure that the measure was appropriate, as he or she was responsible for its performance. The production engineering manager shared his thoughts on this:

We have developed a culture of commitment and that is much due to the result plans. Even though I must admit that it [the culture] differs around the organisation to some degree, in general we are there. By involving people in the cascading process [yearly/quarterly meetings], giving them the ownership and track progress continuously the KPI´s have become something else than a thing that you report and then don't care about. If a KPI do not seem appropriate anymore it is directly highlighted. Why you might ask? Because we want to see improvements and the owner of the KPI want to deliver improvements. Once he or she realises that the KPI is no good they will not want to tie actions to it that are followed up on a weekly basis.

4.1.1 The meeting structure

Result plan process material highlighted that the meeting structure consisted of yearly, quarterly, and weekly meetings. The yearly meetings endeavoured to set the goals and measures for the coming year with consideration for the overall strategy, strategic and operational achievements, historical performance, and business environment. Further, these meeting were used to cascade measures throughout the organisation. The quarterly meetings alluded to reviewing, modifying, and updating measures and goals depending on strategic and operational performance and changes in both internal and external environments. Finally, the weekly

meetings sought to follow up the actions linked to the quarterly PM and goals and ensure that progress was constantly achieved.

The yearly and quarterly meetings were executed hierarchically, the management team initiated the process by having their meeting. Once done, their output was used as input to the functional management teams. Further, once the functional management teams had executed their meetings, their output was used as input by the departments. The departments would then feed the production teams with input for their meeting before the process was due. The meeting structure had to follow this top-down interlinked approach in order to ensure that the ability existed to manage change in PM deployed across the whole organisation. Several interviewees (production, finance, production engineering, site manager) made it explicit however that the top-down requirement did not confine the weekly meetings. The process material highlighted that at the end of each year the yearly and quarterly meetings were executed jointly. Interview results underlined however that they were widely referred to as yearly meetings by the employees.

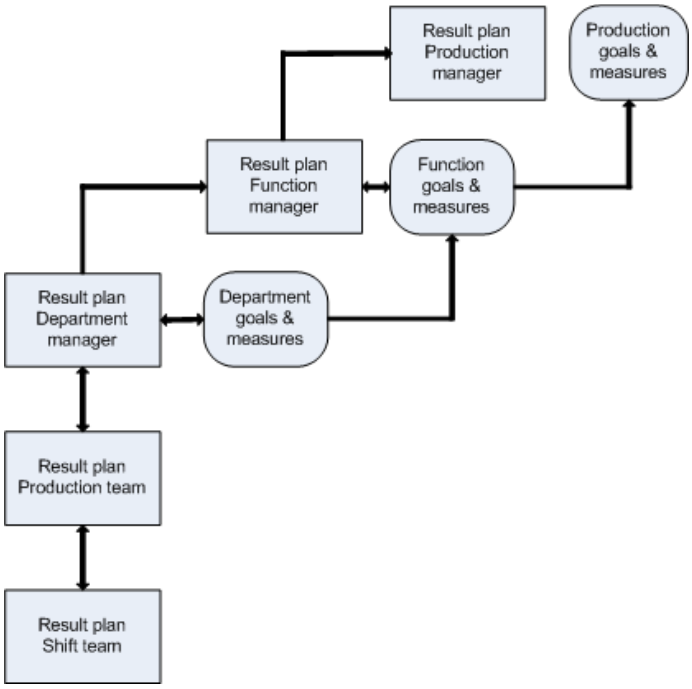

Figure 3: The result plan process.

4.2 Decision making

Result plan process material made it evident that the idea was to involve several tools in assisting the weekly, quarterly and yearly meetings. For the weekly meetings a standardised PowerPoint presentation was to be used for each result plan. The rationale behind using a presentation rather than the actual result plan was to execute the meetings more effectively and visualise what the presenter (the owner of the result plan) deemed important for a given week. As the result plan contained a considerable amount of information (yearly and quarterly goals/ PM and actions/ tasks tied to them) they were perceived by most interviewees as too messy to understand over the course of the three minutes that each presenter had to her disposal. For the production and shift teams the weekly meetings were different as the result plan was collectively owned. Here, the focus was put on going through the actions assigned to the various operators and assemblers.

For the quarterly meetings another PowerPoint presentation was to be used according to the process material. During the quarterly meetings focus was put on summarising the progress

towards the yearly goals, lessons learnt and presenting the changes of goals and PM. The changes in PM could range from adding, replacing or abolishing a PM to changes in data source, data formula, ownership or measurement frequency. Some rigidness was applied to changes that could be made. PM that was deemed as indispensable by the management team had to be measured across the organisation and could not be abolished or replaced. Changes could however occur to the goal levels, data source, data formula, ownership or measurement frequency but had to be validated. The PowerPoint presentation incorporated all these elements and each presenter got 10 minutes to share her experiences and proposed changes. At production and shift team levels a wider discussion was held regarding these elements instead of individual presentations. The yearly meetings resembled the quarterly meetings in structure but also involved a post-it exercise in order to add a brainstorm element in the goal and PM creation. The interview results from all 10 managers listed several triggers of change for PM and goals: changes in the strategic objectives, order from above, changes in volumes, quality problems from customers, measurement improvements, learning, historical values, continuous improvements and a desire to trigger the organisation to take actions.

4.3 IT-systems

Interview results and direct observations underlined that the case company used multiple IT-systems with comprehensive manual impositions for generating PM and PMS reports. The interview results clearly indicated that this had a negative effect on the quality of the data. The respondents expressed that they viewed the quality of data as correlated to the viability of the PMS over time. The consequence of the output with low quality was a decrease in trust, importance, and will to keep the PMS up to date. The maintenance manager argued:

We [the maintenance department] use a mix of many different systems. Avantis is an important system for us, SAP of course as well, Excel is also used a lot…No automation exists and we are supposed to calculate the KPI´s ourselves. I don´t know how many times we have agreed on in the management team that we need to measure something just to realise that we can´t get it out of the system, it is too rigid…Some people might believe what they see in a KPI directly but I am always suspicious. I question them [the KPI's] often and do not like to take important decisions on them…You need to question how it [the KPI] has been generated and if all the manual impositions have made it corrupt.

The site manager had a slightly different opinion regarding the IT-systems. He acknowledged the fragmented infrastructure, level of manual impositions and problems with data quality but underlined the role of the competence of the people within the organisation:

There are very few people that think that they can work in the systems and get the data that they want to a KPI…Instead of talking about the flexibility of the systems we should maybe question the flexibility of the competence. It is easy to blame the system all the time and I do believe that we sometimes choose the easy way here.

4.4 Ownership and education

All ten interviewees agreed that the site manager was the owner of the result plan process. However, even though the site manager himself acknowledged that he was the owner he underlined that the ownership was shared with the financial manager and that the finance department was responsible for maintaining the daily operations and functionality. The finance manager agreed with the site manager but made sure to make a distinction. The finance department owned the result plan process with the site manager but the PM were owned by respective function. Moreover, the interviewees reached consensus regarding that the result plan process had been developed and implemented by an external management consultant firm. When implementing the result plan process, the organisation became educated in how the process works and how to create a result-oriented mind-set. The education form was not rigid

but adapted to the situation. It could range from one-on-one sessions to group sessions. However, all new white collar workers in the organisation had one-on-one sessions with an consultant from the firm where the consultant created a result plan for the recruit. The consultant firm had also pledged to coach the organisation after the implementation in order to get the way of working to run as intended. Thus, the consultant firm was involved in all three types of meetings regularly across the organisation in order to assist, coach, and further educate.

4.5 Functionality

When asked how they felt that the result plan process functioned the responses varied amongst the ten interviewees. The finance, quality, HR managers felt that the result plan process functioned considerably well within their organisations. This was especially highlighted by the finance and HR managers. The production, maintenance, logistics and production engineering managers were less optimistic about the functionality but underlined that it worked satisfactory. The responses regarding the functionality coincide with the size of each function. The finance, quality and HR functions do have low head counts in comparison with the production, maintenance, logistics and production engineering dittos. The site manager argued that the process worked well but that there was much more to ask for, especially when coming to the involvement of the employees. Regardless of the functionality of the process, the interviewees reached consensus in their strong support of/commitment to the result plan process. Several respondents hailed its versatile range of applying, updating, and aligning goals/PM, fostering a result and measurement-oriented culture, and empowering local expertise on all organisational levels.

5. Case Study B: findings from an operational perspective

Case Study B was an in-depth participative study studying the PM review practice from an operational perspective. Participative observations revealed that the vision of the process was never fulfilled, as it was flawed from several aspects. In order to enhance the understanding regarding the flaws of the process, a problem workshop was designed and executed on the orders of the top-management team (Table 4). The specific purpose of the problem workshop was to outline the gap between the current state and the vision of the result plan process. A group of 12 representative individuals from various parts of the organisation participated in the workshop. The workshop was complemented with informal interviews and result plan process material from across the organisation.

5.1 Process problems

Participative observations and workshop output made it evident that the workshop participants perceived that the PM set at the yearly meetings were meant to be derived from the PMS in order to reach coherence in goal setting and follow up. The workshop participants believed that the idea was to use the PMS as a tool for reporting and the result plan as a tool ownership, PM change management and continuous improvement. However, no consistency was reached at the lower levels of the organisation between PMS and result plan. Direct observations and informal discussions with managers and operators/assemblers across the organisation revealed that the yearly and quarterly meetings were often not held in parts of the organisation. Several members of the first-line management felt that the result plan process was too burdensome and that the resources, mainly time, were not sufficient to hold the quarterly and yearly meetings. If they were held, the chronological order of the meeting structure was overlooked. Analysis of archived result plan process documentation demonstrated that not everyone had a result plan. Considerable parts of the largest organisational function did not use the result plan. Instead, they deployed their PMS and claimed that it was their result plan. Moreover, the same analysis revealed that the weekly follow-up PowerPoint presentation got updated regularly whilst the result plan was often not revisited between the quarterly and yearly meetings.

Table 4: The problem workshop output.

Categories	***Issues/Challenges***
PMS & Deployment Process	No coherent business plan in place Target image not clear and precise We do not always work together towards a given direction Operators not involved in the cascading of strategies to KPI/PI To make people understand the strategy No clear communication when developing KPIs The relationships between KPIs are hard to understand Result plans not cascaded down the whole organisation Operators do not always understand how to affect the KPIs Relationship between strategy/plant KPIs/shift team PI's not clear Lack of feedback regarding the KPI changes that are done Bad information regarding the plant KPIs; explanations needed. Not everyone understands and can explain the KPIs The common plant KPIs are not visible and clearly communicated Not everyone measures the same goal Sub-optimisation due to low KPI understanding
Performance Follow Up	Too many problems on the action plans creates a decreased focus No standardised way of working with the action plan No action plan exist for under-achieved goals Way of working to find root causes is not known to everyone Ad-hoc solutions have become permanent to achieve goals Feedback of problems sent to another department is non-existent
Prioritisation of Goals	Production is always placed highest in order. Delivery is the highest ranked KPI when it really comes down to it Insufficient quality focus due to the focus on delivery precision No defined priorities exist at group levels How are we meant to prioritise in excess of the scorecards
Continuous Improvements	Insufficient resources cripple the CI activities Not enough time to work with all the problems Resource insufficiency limits the ability to accomplish the set goals

From the informal interviews conducted across the organisation several process deficiencies emerged. Firstly, as the result plan process was not closed-looped no feedback was provided upwards. Secondly, no active ownership and governance existed, after the education by the external management firm it was up to the team or individual to follow the way of working of the process. A clear confusion existed amongst the workshop participants regarding who owned and governed the result plan process. Thirdly, within the organisation there existed no official process documentation, instead the documentation was scattered across the organisation with no clear direction. Informal interviews and discussions with the external management consultants that implemented the process underlined that organisational politics prohibited the organisation from recording the process documentation in the company group´s official process description system. As the result plan process was only used at the case company it was deemed inappropriate to document it in the system that served the whole company group. Fourthly, as the actual result plan did not have to be visualised often, it was easy to neglect it and focus on keeping the weekly presentation updated. Finally, the functionality of the process within a function or department ultimately became dependent on the individual manager.

5.2 Understanding and culture

The workshop output highlighted that the organisation had problems understanding the PM, the intra-relationship among PM, their relationship to strategy, and how to affect them (Table 4). It was highlighted by the workshop participants that the efforts to get the organisation to generate this understanding were not prioritised from the top-management. Participative observations indicated that there was a general lack of understanding of the required effort and commitment from the top management. Informal discussions with first-line managers revealed that the lack of understanding regarding how to affect the PM could develop into a lacklustre attitude and disengagement among employees. Moreover, one first-line manager argued that the top management needed to look past the reality of their own group and take actions in order to create a condition that allowed the people in the organisation to understand and thus get involved. Several first-line managers stated that the unsatisfactory premises signalled a lack of commitment from management and affected their support for the result plan process. Another first-line manager did not think that the result orientation and measurement culture was close to being achieved just because management and employees had received a small amount of education.

5.3 Education and employee turnover

Direct observations and informal interviews revealed that the shortcomings of the process were partially due to a lack of education, which was in turn due to employee turnover. The external management consulting firm had a lower presence, as their contract was set to elapse. This impacted negatively on the available education sessions for individuals new at the company. The case company had, during the nine month long case study period, recovered well from the financial crisis of 2008. It employed heavily in order to make up for the downsizing it was forced to implement in the midst of the crisis. Thus, a situation arose in which new personnel received little or no education regarding the result plan process.

5.4 Communication and IT-systems

Direct and participative observations made evident that the organisation struggled in structuring information related to the result plan process. The result plans were held at the internal website of each respective department. No other organisational member could log on the website without first being granted access. This put the organisation in a position where it had to assume that the way of working functioned, as it did not have the means to quickly check it. Workshop output emphasised that communication regarding measures and goals was vague and unarticulated due to the limited access to the deployed PM. Consensus was reached amongst first-line managers regarding the flexibility of the IT-systems. They did not feel inhibited by the IT-systems as such and could measure what they wanted to measure. These managers were served with the compilation of several PM from the logistics and finance departments and worked primarily with Excel.

6. Discussion

6.1 Review process

Judging by the purpose of the result plan process and interviewee responses, the case company acknowledged the need for a systematic and recurring process for reviewing PM in line with the theoretical findings (Wisner and Fawcett, 1991; Kaplan and Norton, 1996; Medori and Steeple, 2000). As outlined in the literature review, a review process is needed as a structure in order to enable and facilitate change within a PMS and coordinate and align it within the organisation. However, the characteristics of the process deployed by the case company are distinctive from the ones proposed in theory. No questionnaires or management tools were deployed as highlighted by several frameworks (Dixon et al., 1990; Ghalayini et al., 1997; Kennerley and

Neely, 2002; Neely et al., 2002b; Najmi et al., 2005). Moreover, the result plan process did not take the shape of the processes described by Bititci et al. (2000), Bourne et al. (2000) or Searcy (2011). The only theoretical finding that coincides between the theoretical and empirical findings is the hierarchical approach described by Najmi et al. (2005).

The empirical findings underlines that the result plan process was about more than only reviewing and updating PM. The process was also about exacerbating a culture of PM and disseminating ownership in order to involve employees within the organisation and ultimately drive performance. The role of involving the organisation was continuously underlined by the top-management and was an important feature of the result plan process design. The role of involvement is distinctive between the theoretical and empirical findings. In the literature (section 2.5) little was found regarding the role of organisational involvement in the PM review process. In contrast, at the case company, involving the individuals was seen as imperative and a highly important function of the result plan process. One plausible explanation to the practical and theoretical divide regarding the importance of involvement could be the approach of the previous research.

As outlined in the literature synthesis, earlier research has taken on the phenomenon from a management perspective. Thus, focusing on tools for management to assess whether the PM have lost their relevance and need to be replaced or if they are still relevant. However, in practice the focus is less on how decisions are made on the soundness of a given PM and more on how to ensure that the organisation is involved. The rationale underpinning the practical focus is that progress and performance is obtained by capitalising on organisational size and by giving the responsibilities of reviewing and updating to the PM owners, regardless of hierarchical belongings. The focus on involvement, the interlinked and chronological process design and the sheer size of people involved could explain the limited functionality of the result plan process. As indicated in the empirical findings of case study A, the functionality of the process seemed to be tied to the size of the functions. The smaller functions, head count wise, (Finance, HR and Quality) believed that it worked well within their jurisdictions whilst the head count heavy functions only felt that it worked satisfactory.

The case company did not manage to fulfil the management´s vision of the process as it failed to involve the organisation. The burden of executing the meeting structure was too heavy, the process was too badly documented, the ownership and governance too inactive, the transparency too weak, the understanding and available resources too limited. The combination of these deficiencies created a situation in which a divide in perception of the process functionality emerged distinctively. The most pessimistic of managers thought that the process at least worked satisfactory whilst the employees were absolute in their view that it did not work at all.

6.2 Culture

The need for a supportive culture in order to ensure the long term relevance of PM is highlighted in theory (Waggoner et al., 1999; Kennerley and Neely, 2002; Kennerley et al., 2003). Recalling from the literature chapter, a culture needs to be existent within the organisation that ensures that the value of measurement, and importance of maintaining relevant and appropriate PM, are appreciated (Kennerley and Neely, 2003). The empirical findings suggest that a supportive culture is indeed important. The result plan process was intended by the management, besides reviewing and updating PM, to foster and amplify a culture beneficial for PM and the empowerment of the local expertise. It was perceived important to develop a culture of commitment towards PM in order to ensure that the employees would take a proactive stance towards ensuring that their PM are updated and relevant. The challenge for the organisation lied however less in understanding the need for a supportive culture and more in understanding what to do in order to acquire it. The culture ended up being inhibited by the limited application

of the result plan process. The lack of understanding of how to affect the PM, the limitations in education, and the negative perception of management commitment reduced the result plan process to a drawing board product with little organisational support. Regardless of how well the management had succeeded in driving cultural change at the case company this finding suggests that the conclusions drawn by Waggoner et al. (1999) and Kennerley et al. (2003) regarding the important role of culture in managing change in PM are confirmed. As the research on the role of culture was earlier made from a management perspective (Kennerley et al., 2003) and a literature study (Waggoner et al., 1999) it is here validated from a wider perspective.

6.3 Management

The pivotal role that management commitment and understanding plays has been emphasised earlier by Waggoner et al. (1999), Kennerley and Neely (2002) and Searcy (2011). The empirics highlighted that the employees wrongfully doubted management commitment due to the lack of pre-requisites. The interview responses in case study A indicates that the management was highly committed to the result plan process. However, case study B indicated that the management seemed to lack the understanding of the resources required in order to make it practically applicable. Moreover, as the process was not closed looped, no formal feedback was given to the management regarding the functionality of the procedure; thus, the problem had no chance of being highlighted. A situation arose in which the management believed that the practice worked as intended, while it in fact was neglected due to time and resource constraints. Consequentially, this had a negative impact on the organisational commitment for the process, as was made evident in case study B. First-line management chose to spend their time on operational matters rather than effectuating the meeting structure. Once again, a divide in perception appears from the empirics, this time in regards to the stance of the management towards the result plan process. The management commitment to the process was drained due to the limited understanding for how to make it practically work and consequentially negatively affected the commitment of the organisation towards the process. The theoretical findings regarding the role of management are supported by the empirics in this paper.

6.4 IT-capabilities

The role of the IT-system is emphasised by several academicians (Waggoner et al., 1999; Bititci et al., 2000; Kennerley and Neely, 2002; Wettstein and Kueng, 2002). In the literature an integrated and flexible IT-system is advocated. This is confirmed by the presented empirical data in case study A. The IT-needs in case study B was satisfied by the support functions and the first-line managers did not seem to be troubled by Excel. In contrast, the comprehensive manual impositions negatively affected data quality and consequently the will to keep the PMS up to date according to the respondents in case study A. Even though it became evident that the case company had a disseminated IT-infrastructure the views were not entirely coherent. The site manager pointed at the role of competence in regards to getting the data out of the systems whilst the maintenance manager believed the problem lied in the inflexibility of the systems. The findings suggest that the characteristics of the IT-infrastructure are of more concern on a management level rather than an organisational level. A plausible explanation to this could be that the first-line managers and teams are not exposed to the limitations of the IT-system as the support functions work behind the scenes to provide the data and PM reports.

7. Conclusions and future research

The functionality of the result plan process seems to be tied to the size of the organisational function. The people-wise smaller functions felt it functioned better than their people-intensive equivalences. The smaller functions could deal with the process deficiencies and still make it work due to their sheer size whilst the conditions were simply inadequate for the bigger functions. This suggests that it is not enough for a top-management team to have the

competence to design a sound process for managing change in PM, the competence to make it practically work is equally important. This competence can be, as illustrated in this paper, the difference between a functional process and a desktop product. Moreover, several other conclusions can be drawn from the findings made in this paper:

- There is still more to ask for from the research on how to manage change in PM. The future research needs to take a more balanced organisational approach rather than strict a management focus. The interlinked approach of the review process and the focus on involvement at the case company is novel when contrasted to the current theoretical base due to the organisational-approach of the case studies presented in the paper.

- Culture, management and IT-systems can have crucial consequences on the functionality of a review process as indicated by the findings. In relation to this, the findings made by other researchers regarding these factors are strengthened. Moreover, the role of ownership, education and understanding, transparency and process documentation was also highlighted of considerable importance for the process functionality. However, the empirical data is too limited to generalise and more research is needed from an operational perspective on the factors affecting the ability to manage change in PM.

- The empirical findings suggest that the connection between the management and evolution phases of the PMS life-cycle seems to be undistinguishable. In practice, the management of PM in order to drive results and improvements is not detached from managing change in PM. This was made evident by the relentless focus of the management and result plan process in involving the organisation in changing PM. The findings made in this paper are derived from two case studies at one case company and are thus limited. However, we want to propose an alternative view of the PMS life-cycle for the future research agenda to further investigate and develop. A PMS life-cycle that consists of three-phases rather than four with the third phase altered to dealing with both the management of the PMS and how do ensure that it remains relevant over time.

- Finally, more research is needed into understanding how organisations in practice manage change in PM. This paper highlights how one company does it but more research is needed in order amplify the understanding of the means and challenges in practice. This would guide the future research agenda in a direction that is beneficial for academia and practice alike.

7. Contribution

Three contributions to theory and academia emerge from this paper. Firstly, the amplified insight it provides academicians concerning how manufacturing organisations conduct their PM review practices. Theoretical frameworks have emerged lately, dictating how organisations should act. However, an empirical gap exists regarding how they actually do act. This paper contributes to the knowledge in the field of PMM by narrowing that gap. Secondly, the paper suggests that the PMS life-cycle phase ought to be perceived as three-phased rather than four-phased, this in order to ensure that the theoretical knowledge within the field of PMM reflects how PM are managed and changed in practice. Thirdly, it provides some guidance for the future research agenda for managing change in PM.

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