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INVOLVING EMPLOYEES IN THE DEVELOPMENT PROCESS OF PERFORMANCE MEASUREMENT AND MANAGEMENT SYSTEMS

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Abstract: Performance measurement and management (PMM) offers organizations numerous benefits. However, such systems can rarely exploit their full potential in practice. The implementation of a PMM system causes a substantial change of the organization. By considering change management and involving employees in the development process, the chances of a success of the PMM initiative can be increased. This paper introduces a participatory model for developing a customized PMM system. The model includes several tools, which enable the organization to involve their employees in the development process and increase the understanding of the system. Thereby, commitment towards PMM can be enhanced.

Keywords: performance measurement, performance management, change management

1. INTRODUCTION

Organizations have to improve their performance continuously in order to enable sustainable success on the market. The concept of performance has changed over the past decades. Besides effectiveness and efficiency, further criteria need to be taken into account, e.g. productivity, flexibility, creativity and sustainability. [1] Firms have to cope with a steadily increasing complexity and dynamic. This makes it harder for them to keep an overview of their performance. As a result, the need for modern Performance Measurement and Management Systems (PMM-systems) is increasing. Furthermore, the Internet of Things offers new possibilities for such systems. [2]

In the 1980s traditional accounting based measurement systems were called into question. [3] They have been heavily criticized for being, backward looking, encouraging short-termism, lacking strategic and external focus, encouraging minimization of variance rather than continuous improvement as well as not taking all necessary performance levels into account. [4,5,6] As a result performance measurement and management systems were developed. Such systems try to overcome all before mentioned shortcomings. They are multidimensional, have a balanced mix of financial and non-financial indicators, use a combination of long-term and short-term horizons as well as include a forward looking perspective. Furthermore, they are aligned with the strategy and take critical success factors into account. Consequently, PMM-systems enable the effective analysis, controlling and management of organizations. [5,7] Academics and practitioners developed numerous frameworks such as the Performance Pyramid, the Tableau de Bord, the Performance Prism and the Balanced Scorecard (BSC). [7] The BSC is by far the most popular PMM framework in the literature and in practice. Studies suggest that between 30 to 60 percent of organizations have adopted the BSC. [8] Harvard Business Review listed it as one of the 75 influential ideas of the twentieth century. [9] However, PMM-systems have only partly managed to realize the promoted advantages in practice and are unable to exploit their full potential. [10]

Over the past decade researches have tried to evaluate the impact of PMM-systems on the organizational performance. The results are contradictory. Some see a positive effect of PMM-systems and non-financial measures on performance. [11] Davis and Albright showed that business units using a BSC





significantly outperform those without a PMM-system. [12] Other studies failed to identify the positive impact of PMM-systems. One possible cause for this inconsistent results is that the effectiveness of a PMM-System is influenced by the way it is implemented. [11] Practitioners have identified difficulties with implanting PMM-systems. According to Bourne the main factors blocking the implementation are the required effort, the access to necessary data, the consequences of measurement as well as cultural problems. [13] Further barriers are lack of trust, lack of understanding, difficulties finding the right measures, inconsistent targets, unclear definitions of measures as well as missing IT support for data capturing and reporting. [14] Top management commitment and understanding the benefits of a PMM-system are the most important enablers of PMM initiatives. [13] Bourne et al. noted that the raised issues are connected to change management. The implementation of such systems calls for substantial change within the organization. However, the PMM design and implementation processes are only partial processes, lack change management aspects and give little advise on the implementation. The chances of a sustainable implementation and success of PMM-systems can be improved by taking the insights of organizational change scholars into account. [15] Nudurupati et al. highlighted the need to identify change management techniques which assist in the process of developing and implementing PMM-systems. [16]

This paper introduces a participatory model for developing and implementing a customized PMM-system. The model was used to implement a comprehensive PMM-system in two corporate groups.

2. THE DEVELOPMENT AND IMPLEMENTATION PROCESS

PMM is a communication and guiding mechanism. If it is implemented correctly and used in the right way, it enables the organization to channel efforts into the direction of high performance. [4] Bourne states that the process of implementing a PMM-system could be significantly improved by involving participation across organizational layers. [15] By using insights from the area of change management during development and implementation, it is possible to increase the commitment and understanding of the employees for the PMM-system. The development and implementation processes consist of four stages and is shown in Figure 1.

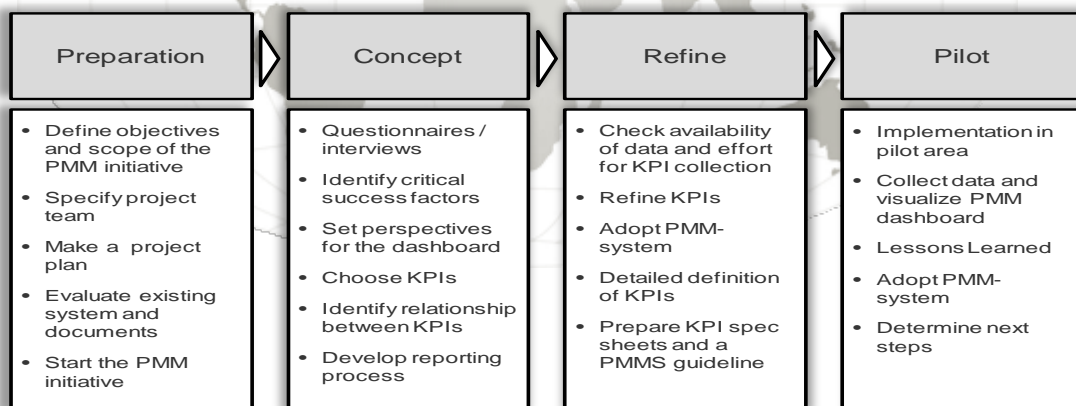


Figure 1 - PMM development and implementation process [17]

2.1. Preparation

A PMM initiative begins with the preparation phase. The idea respectively the plan to implement a PMM system is explored and discussed. It is necessary to define why a PMM system should be employed and set the objectives of the project. If there is a detailed description of benefits and reasons for the PMM-system, it will be easier to get the project team as well as the rest of the employees involved. Furthermore, the scope of the PMM project needs to be defined, e.g. implementation in a single department, on top management level, in the whole company or in several sites.

Developing and implementing a PMM-system is a huge project and needs suitable project management [18]. It takes several years to get the system running properly [19]. To ensure appropriate project management it is necessary to define a project team as well as a project leader. The project leader should have experience with change management as well as know-how in the field of PMM. It is possible to use an external expert for this role. He facilitates the design process and offers an unbiased view from the outside. Furthermore, it is necessary to have change agents in the project team. The team should also involve people from the IT and controlling department. An important success factor is to provide the necessary resources. Developing and implanting a PMM-system is very time consuming [20]. Hence, time is one of the most critical resources for a PMM initiative. Senior management has to make sure that





people get the time they need in order to enable them to contribute to the PMM initiative [18]. It is vital to create a project time table and set responsibilities for the individual project tasks. The process shown in Figure 1 provides the basis for creating the project plan. Milestones need to be defined and due dates set. A steering committee should be established, which meets at a regular intervals. In those meetings the PMM team presents the current status of the project and the next steps are discussed. In order to assist change management a communication plan should be developed. This plan states who communicates and which information at which time to whom is going. In addition, it defines the communication medium.

An important task during the preparation phase is to analyze and evaluate the existing information system as well as reporting mechanisms. It is necessary to get an overview of how the current system works and which software solutions are used. Most big companies have a mature financial management accounting system established. Furthermore, there are often dozens of measures in each functional department in place. Do not look at each existing performance measure in detail. Stage two of the development and implementation process will help to identify the measures which really matter. Firms tend to use a too large number of measures and lose the overview [18]. Since the PMM system has to be aligned with the company's strategy, the relevant documents need to be analyzed. The preparation phase ends with an official project kick-off, where the employees are informed about the project, its goals as well as the project plan. People need to understand why a PMM-system is implemented and how it is done.

2.2. Concept

In this phase a rough design of the PMM system is developed and Key Performance Indicators (KPIs) chosen. It is necessary to focus on the most important aspects for the organization, in order to be able to steer it with only a few KPIs. A key part of a PMM system is KPI dashboards. These visualize the performance of the company and give a comprehensive as well as balanced picture of the company's performance. To do so, the critical success factors for the firm need to be identified. A combined top-down and bottom-up approach has proven to be beneficial. Thanks to the analysis of strategy documents (preparation stage) it is possible to identify success factors from a top-down perspective. To get the bottom-up perspective it is necessary to involve the employees. Among others, the following question should be answered [2]:

- ✧ Who are the most important stakeholders? What are their requirements and desires?
- ✧ Derived from the stakeholder needs, what are essential strategic objectives?
- ✧ When is the organization successful? What is it needed therefor?
- ✧ What are the biggest challenges for the company?

The results of the document analysis are compared with the bottom-up results. The degree of consistency shows how well the strategy is operationalized and rooted within the employees. A gap between the two views can also give inputs for revising the strategy. A vital tool in the concept phase is the KPI workshop, which is explained in the next chapter. In such workshops the critical success factors are identified, KPI chosen and a rough concept of the performance dashboard created. The cause-effect relationship between these KPIs is analyzed by using a cross-impact-analysis (see next chapter). With this tool it is possible to identify leading indicators and the insights can be used for managing performance. Furthermore, it strengthens the understanding for the KPIs as well as the PMM-system. The final step in the concept phase is to develop the reporting process. It is beneficial to build on already existing reporting structures, if possible.

2.3. Refine

The concept developed in the previous stage needs to be worked out in detail. At the end of the KPI workshop a responsible person for each KPI is determined. These persons work out a detailed definition of the KPI. It needs to be specified how they are calculated and which data is used. The person responsible for the measure checks if the necessary data for calculating it is available and verifies if it has the intended impact. The KPI has to make it possible to track the development of the linked critical success factor. In this phase communication is especially important. In the first two stages there are several workshops where all team members come together and are involved in the development process. Consequently, they are well informed about the current status of the PMM project as well as the next steps. In the refine phase individual persons work alone or in smaller teams on special tasks. This makes it harder to get an overview of the progress. People need to be regularly informed, in order to keep the change process running and the momentum up.





For each KPI target values need to be set. In general these should be challenging but attainable. Industry benchmarks as well as historical data can help to set appropriate levels. By deriving the targets from best in class values, it is ensured that the organization is driven towards high performance. However, if the targets are set to high and cannot be reached, it will demotivate employees and result in poor performance. If historical data is used, it should be analyzed which value can be reached in the review period under the current circumstances. [21] Data analytics can help to identify possibilities for improvement and to quantify the reachable improvement. [22] Another important part in this phase plays visual management. It needs to be defined how the dashboards, reports and charts look like. The design should be based on the needs of the recipients. For example, a dashboard used by senior management should not be too complex. It should give a quick overview of the current situation and should make it visible, if there are problem areas. These can then be discussed in detail using special reports.

2.4. Pilot

After the concept of the PMM-system is finalized, it is implemented in a pilot area. Thereby, one should try to keep it as simple as possible. The system as well as the used tools does not need to be highly sophisticated at the beginning. It is more important to generate quick wins and some initial experience. People need to see progress. However, the approach has to be well planned and organized. Otherwise, people could lose their trust in the system as well as in the previous stages build commitment. It is advisable to utilize existing structures and processes. For example, if there are already regular meetings where the management team meets, they can be used to discuss the KPI-dashboards and derive measures. Building new infrastructure takes a lot of time and resources.

It is not necessary to report all KPIs from the very beginning. The implementation of new KPIs will probably take some time. However, the data for most of the other KPIs will be available. It is better to start early and extend the dashboard as soon as the new KPIs are available. Hence, it is possible to gain experience relatively fast and show quick wins. Furthermore, you do not lose momentum in the change process and the pressure to implement the missing KPIs will be higher. In the reporting process the dashboard is reviewed at regular bases and the KPIs are discussed. So, everyone will be reminded that some KPIs are still missing and management will ask for status updates.

It will probably be necessary to make some adaptations to the system, after the first experience is gained. That's another reasons, why it should be kept as simple as possible at the beginning. The system should not be too sophisticated. Spreadsheets should suffice, e.g. Microsoft Excel. Changes can be easily made and there is no specific IT know how needed. The gained experience and the spreadsheet prototype can later be used to create a specification sheet for a PMM software solution. In the pilot phase it is important to create a culture of open feedback. People need to be able to express concerns. There should be lessons learned workshops on regular basis. The gained insights are then used to adopt and improve the system. During the pilot phase earned experience helps to avoid mistakes when implementing the system in other areas. A management cycle should be established which enables double-loop-learning. The thanks to PMM gathered information should be used to revise the strategy as well as the critical success factors.

3. INSTRUMENTS FACILITATING THE CHANGE PROCESS

Measuring the performance of people is a very sensitive topic. Implementing a new PMM-system can cause great organizational stress. Therefore, the development and implementation process needs to deal with the changes and address change management issues. [23] Research about how change management could assist in the development and implementation process in the field of PMM is limited. Especially softer aspects of change that are encountered during the implementation are given to little attention. In order to address change management aspects and increase the commitment, the development and implementation process should be participatory. To be able to raise concerns is an important factor for the process. Employees need to be reached on an emotional level in order to create commitment. This is best achieved by involving the employees in the development and implementation process. [24] Using change management aspects and techniques can help to reduce barriers. The PMM system can only deliver its full benefits, if it is accepted by the employees. Is this the case a PMM-system becomes in turn a change management tool itself and helps to operationalize the strategy [4]. Figure 2 shows the change process during the development and implementation of the PMM-system.

Baumgartner et al. differ in their generic management approach between four main fields of coordination, i.e. strategy, structure, data and culture. Table 1 displays the main aspects of each of these fields. Change can be facilitated with different instruments in every coordination field. An adequate mix of this instruments based on the importance of the four fields, helps to increase the probability of a





successful PMM-system implementation. [25] The weights of the four fields in each stage (size of the triangle) as well as tools facilitating the change are visualized in Figure 2. Some of these instruments will be explained in more detail in this chapter.

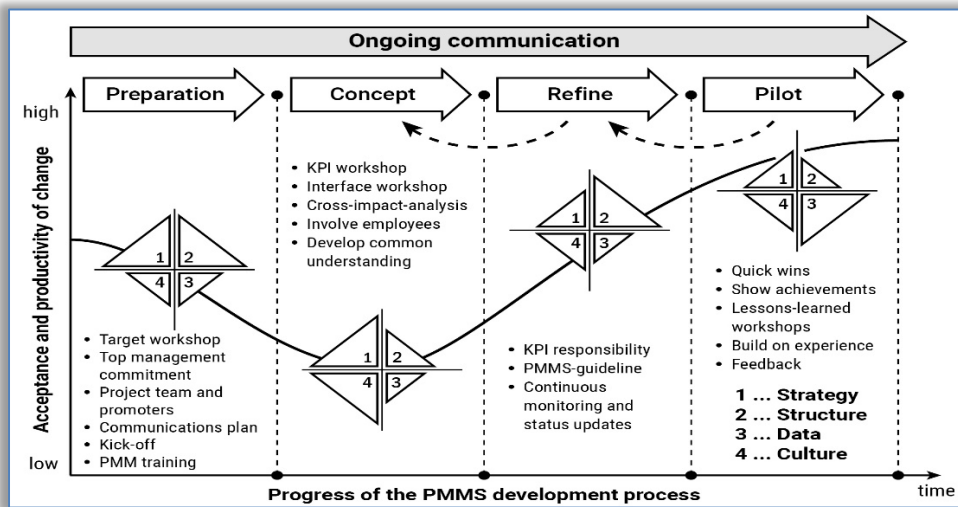


Figure 2 – Change process during the development and implementation of a PMM-system

Table 1 – The four fields of coordination

Strategy	Structure	Data	Culture
» Stakeholder requirements	» Operational and organizational structure	» Quality and timeliness of data	» Organizational culture
» Key business activities	» Fine-tuning of business activities	» Gathering information	» Values and principles
» Strategic orientation	» Efficiency	» Information management	» Overcoming resistance
» Effectiveness		» Communication processes	» Change
» Targets & Measures			

3.1. Target Workshop

Showing benefits, setting goals as well as ensuring senior management commitment are some of the most important success factors for a PMM initiative. [13,20] A target workshop can help to ensure that these factors are accounted for. Setting a precisely defined target is a necessity for every project. It sets a clear direction for the initiative and helps to prevent unwanted developments. Desirable goals are the cornerstone for creating commitment and motivation. [26] The participants of the target workshop are the top management, the party who initiated the PMM project and the project leader. In the workshop the reasons for developing a PMM-system are stated and goals defined. Benefits for the organization are worked out in detail. Literature can give some indication here. Goals should be based on the individual organization. People must be able to identify with them. Furthermore, the scope of the initiative is set. The output of the target workshop is a clear vision of the future PMM-system. The attitude of top management towards PMM during the target workshop can give indication of their commitment. Senior management must be sure that implementing a PMM-system is beneficial in the long run. They need to assist in any way they can and make all necessary resources available.

3.2. PMM Training

PMM training helps employees to grasp the benefits of such systems and makes it easier for them to understand it. Trainings can help to decrease barriers and assist in the change process. All members of the project team should get a comprehensive training, which enables them to facilitate the PMM development and implementation process as well as to promote the system. For the rest of the employees a leaner training should suffice.

3.3. KPI Workshops

KPI workshops (see Figure 3) are a central element of the PMM development and implementation process. At the beginning the initial situation is explained and the goals of the PMM project are discussed.

It is important to address possible fears of employees and show benefits of a PMM-system. At the beginning of the concept stage success factors have been identified. These factors are presented and afterwards discussed as well as prioritized by the team. The critical success factors (CSF) are assigned to dashboard perspectives. It is possible to start with the four standard perspectives of the BSC (financial, customer/stakeholder, internal processes, learning and growth). These perspectives can be





adopted as well as extended by another perspective. For each CSF a KPI is derived. In order to do so the team discusses the CSF as well as possibilities of how it could be measured. There are several measure collections available, which can give some ideas. The result is a concept of the PMMS-dashboard for the respective area. At the end of the workshop for each KPI an employee is defined, which is responsible for working it out in more detail.

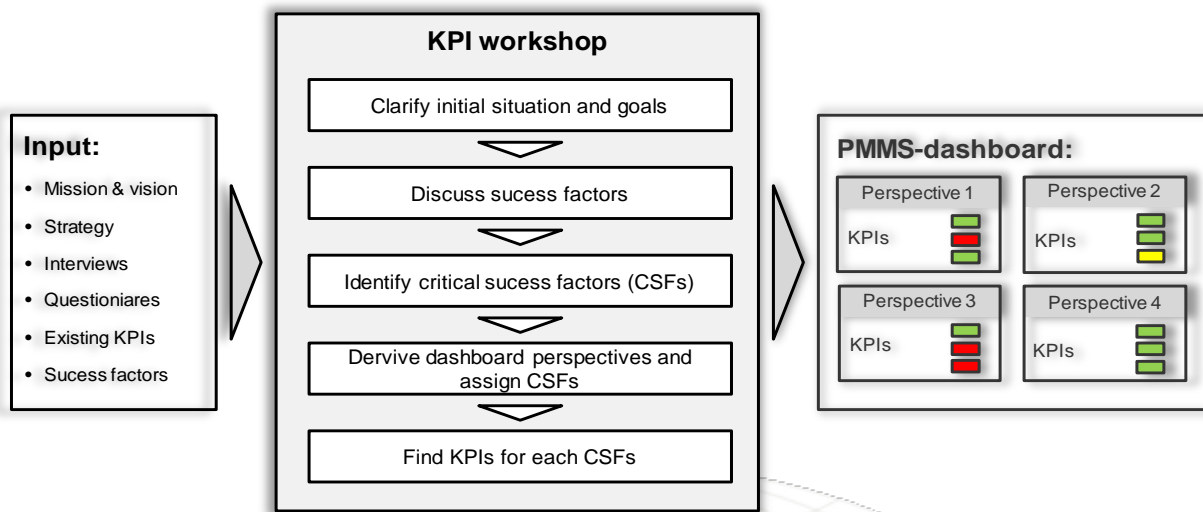


Figure 3 – KPI workshop

3.4. Cross-Impact-Analysis

Critical success factors as well as KPIs influence each other. To enable proper management, the correlation between the KPIs needs to be analyzed. For most of the non-financial KPIs there is no mathematical correlation. Furthermore, KPIs can have differing periodicity and they can react to change in different rates. This makes it complicated to identify the relationship between the KPIs. One tool, to do so is the cross-impact-analysis.

A central element of this analysis is the cross-impact-matrix. It helps to find the correlation between the KPIs. For each KPI it is assessed, if it influences the other KPIs. The relationship between the two KPIs is qualitatively rated on a scale from 0 (no influence) to 3 (strong influence). [27] Each team member fills out a separate matrix. Afterwards, the results are brought together and the mean value for each relationship is calculated. If there is a high standard deviation between the ratings of the individual team members, this suggests that it is not clear how one KPI influences another. Therefore, ratings with a high standard deviation are discussed in a workshop. This helps to strengthen the understanding for the KPIs as well as on how to manage the PMM-system. It will further assist in generating a common view and weakening department-centric thinking. The result of the cross-impact-matrix combined with a rating of the importance of the KPIs by the management can be visualized in an active-passive-portfolio. In this portfolio the passive strength of a KPI is plotted on the x-axis and the active on the y-axis. This helps to categorized KPIs. KPIs with a high active strength should get particular attention, because they make it possible to recognize changes in an early stage.

3.5. PMMS-Guideline

The guideline helps to implement the PMM-system. People need to understand the system as well as the KPIs in order to be able to use it. It contains information about the following points:

- ✧ Introduction: Why PMM?, Goals
- ✧ Description of the PMM-system: Scope of the system, Structure of the dashboards
- ✧ Management Cycle: How does the system work?
- ✧ Reporting Process: How does the reporting work?
- ✧ KPI spec sheet: Detailed information for each KPI
- ✧ Support: Contact details for further questions / help

The person responsible for the KPI creates a spec sheet. It states to which critical success factor the KPI is related to, how the KPI is calculated, how it is defined, which data is needed and where the data comes from. It is important to explain what the KPI means and how it should be interpreted. People need to know what the typical range of the KPI is and how they can influence it. It is good to give suggestions on how the KPI can be improved. Additionally, the relation to other KPIs is shown.





4. RESULTS

PMM-systems enable the effective analysis, controlling and management of organizations. In order to exploit their full potential, employees need to be involved in the development and implementation process. The likelihood of success of a PMM initiative can be increased by using insights from change management scholars. The proposed model includes several tools, which assist the change process during development and implementation of the PMM-system. They help to involve the employees and increase the commitment towards the system. Central instruments are the target workshop, PMM training, KPI workshops, the cross-impact-analysis and the PMMS-guideline. The model was used to implement a PMM-system successfully in two corporate groups.

Note

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