



# Implementing a quality-based performance measurement system

## A case study approach

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### Abstract

**Purpose** – The performance measurement system reflects the corporate strategy and overall business objectives of an organization. The alignment of the performance indicators with the company's critical operating factors, and the processes having bottle-necks alongside the value chain, could result in a very compact, target-oriented, and quality-based performance measurement system. This paper aims to investigate this issue.

**Design/methodology/approach** – The quality-based performance measurement system is developed by integrating the existing performance indicators of an organization with those of best-in-class management practices. The organizational processes included range from business leadership to the operational level. The key performance indicators (KPIs) depict the existing status transparently and comprehensively, whereas later on they can be used to control the processes with the pre-defined values/measures. The KPIs of a process are documented and standardized once they are implemented. An action plan is then developed to write down the prerequisite for the new KPIs and to prioritize the existing ones for the sake of improvement.

**Findings** – It is affirmed that most of the employees had found the performance measurement system a very useful tool to tightly control the flow of their processes. It is very important to mention that this system does not mean giving way to another flood of information; instead it is designed to support the company's decision-making process through target-oriented indicators that could be compared with the existing best practices.

**Originality/value** – The concept described is aimed at developing and implementing a quality-based performance measurement system within an organization. This system is developed through comparing the existing organizational practices with those having been labelled "Best-in-class" and it provides an alternative to the Balanced Score Card approach.

**Keywords** Performance measurement (quality), Quality indicators, Process management, Vehicle components, Germany

**Paper type** Case study



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## 1. Introduction

The fierce competition in the wake of globalization is pushing companies to improve continuously in order to stay in the business. It is a very challenging task to meet the ever-increasing and diversified customer requirements. To tackle this challenge effectively and efficiently, the alignment of the business processes with the customer requirements is vital.

Organizations serving the customer throughout the product life cycle will be successful in the future markets. Therefore, a synergy among the processes across the product value chain, and service-related activities will be a decisive competitive factor. A customer-oriented strategy is the long-term solution to ensure such a competitive advantage (Binner, 2005). This strategy should be inline with the customer requirements, market demands, and the organization's objectives. However, these objectives alone will not be able to serve as basis for controlling and optimizing the entire enterprise (Becker *et al.*, 2005).

Financial indicators are normally used to control and optimize the organizational processes. Nonetheless, one can observe these indicators are not able to explain, for example a lower turn over. The business processes could be strategically planned and controlled only through indicators that are able to establish a direct cause and effect relationship between the process variables (Wicht, 2001). In the current flood of information within an organization, it is very difficult to design strategic operational processes transparently without the relevant key performance indicators (KPIs). These KPIs in fact can serve as an "early warning system" to the companies in constantly changing technological economic and social conditions (Wicht, 2001). The University of Kassel, in cooperation with the Europe's leading armored and tracked vehicles system provider, had developed a quality-based performance measurement system.

## 2. Concept development

In the beginning of the twentieth century the performance measuring indicator, e.g. return on investment (ROI) of DuPont was not reflecting whether or not the company could sustain itself the highly competitive market. The quality-based performance measurement system was materialized to overcome the shortcomings of traditional performance indicators through integrating selective performance indicators with the Balanced Score Card approach. In the beginning of the system development the indicators critical to organization success were selected from the existing performance measuring system. Below is the analysis of the companies' value chain with a focus on to the drivers and impediments for the implementation of performance measurement system (Weber *et al.*, 1997).

In addition to abovementioned two approaches, the quality management aspect is also considered during the course of measurement system development. The resultant system is compact and target oriented, which accounts for all the bottlenecks along the value chain of an enterprise. A combination of above approaches can be used once a target-oriented performance measurement system for an effective and efficient process control is established.

Performance measures are displayed in a transparent way like a traffic signal system, alongside a statement explaining its current status. The trend may be used as a basis for further analysis and actions required, if any.

### 3. Procedure

An integrated quality-oriented performance measurement system realization comprised four stages. In the first stage a process inline with the company's objectives and business requirements is selected and analyzed for the sake of improvement. Following this stage the actual analysis of the process itself takes place to pinpoint and report the problem areas. At the same time short-term solutions are suggested for the improvement of the existing status of the process in question. The performance indicators are selected in the third stage. These indicators are derived and roughly defined from the existing performance measurement system. Later on, the key indicators, inline with the business requirements and the company's objectives, are structured in the form of a measurement system. Subsequently, the newly developed measurement system is discussed with the management and the coworkers before its adoption. This stage results in the development of a quality-oriented KPIs measurement system and its step-by-step implementation plan. This action plan serves as a base for the fourth stage of the procedure – implementation of KPIs as depicted in Figure 1.

The total duration of the four-stage system development is approximately 15 months. The stage I duration is two months; stage II needs four months in total, whereas stages III and IV require over five months each. The performance measurement system development is illustrated in four stages in Figure 1. Below is the detailed description of the four-stage implementation plan followed by KMW.

#### 3.1 Phase 1

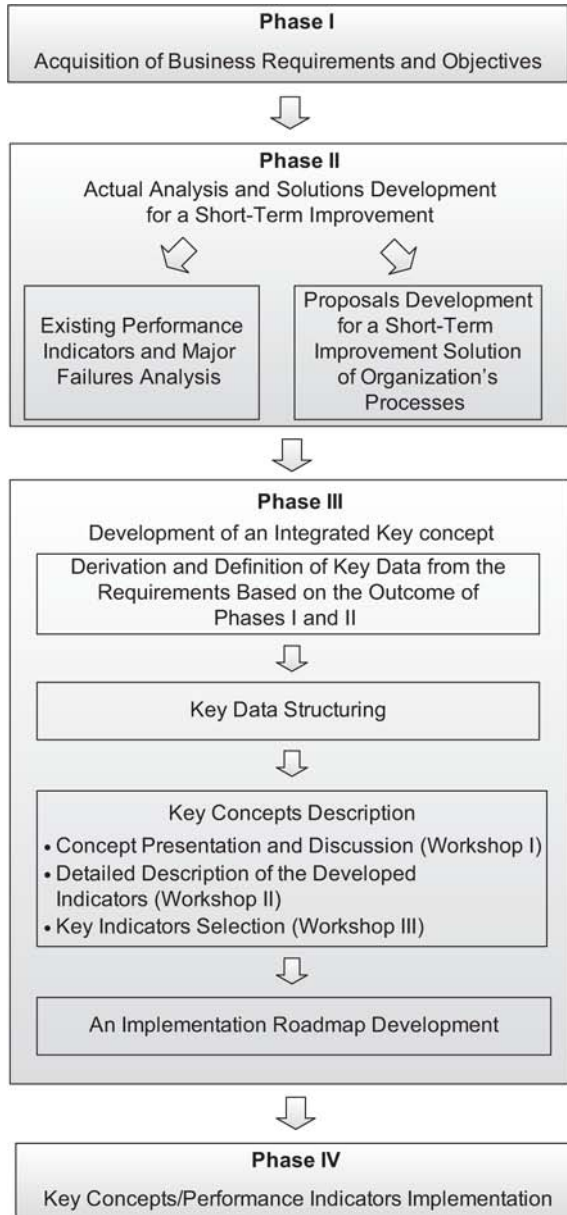
The management approach towards the development of performance measurement system is discussed, and the company's objectives are defined in stage I. The basis for stage I analyses was:

- the existing company's performance indicators;
- the failure reports (collected from computer database and categorized as R&D and Production, wherever the failure occurred); and
- similarly for the Production Planning and Control System.

In stage I the primary objective was to suggest a short-term solution to improve the existing situation.

#### 3.2 Phase 2

Stage II involved the findings of the actual condition. The main focus was to develop an efficient and effective measurement system and to generate solutions that could support the company in achieving its goals. The failure reports and the current performance indicators in the company's existing information technology (IT) system were retrieved and evaluated. Based on this analysis, "quick wins" improvement opportunities of the business processes were figured out and prioritized according to their importance. This stage resulted in a list of short-term improvement proposals, *inter alia*, quality data review of the Production and Control System. Moreover, KPIs were identified systematically through going across the company's value chain and establishing a cause-and-effect relationship among the potential performance indicators.



**Figure 1.**  
Implementation of a  
quality-based performance  
measurement system

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### 3.3 Phase 3

The actual development of the integrated performance measurement system had taken place in stage III with the following four-step approach:

- (1) KPIs are derived and defined according to business objectives and company's goals.
- (2) The KPIs are transformed into a measurement system.
- (3) The performance measurement system is detailed and fine tuned.
- (4) A step-wise implementation plan is developed.

Based on the earlier measurement system, the vital indicators are selected and roughly defined.

The measurement system is then arranged and structured as per the business objectives and company's goals. A workshop with management and employees follows the suit to refine the KPIs and to chalk out an implementation plan. A quality-based performance measurement system alongside a detailed implementation roadmap was the outcome of this stage.

*3.3.1 Step 3.1.* A "top-down approach" was followed for performance measures assortment. This approach leads to the adoption of performance indicators most crucial to business success and the company's strategic intents. On the other hand a "bottom-up approach" was used for target-oriented indicators selection. Thus it results in the selection of indicators critical for processes performance. Selected KPIs were differentiated into strategic and operational. The former addressing the overall challenges the business is facing, while the later reflecting the issues at the operational level. A KPIs sheet, as per VDA (German automobile industry interest group) guidelines, was produced. This was aimed at having a consistent definition of the terms involved for further steps in the procedure, and all other practical matters. Each KPI was recorded with its standardized characteristics on the sheet by the description of the indicators name, a qualitative description, the used calculation formula, the measuring unit with assumptions/conditions/rules, assigned data sources, data collection method and data collection level as well as measuring frequency, target values and the allowed variants of these values. Also the responsible person or unit is indicated on that sheet. The sheet thus served the basis for the subsequent detail on the indicators required on the steps to follow.

*3.3.2 Step 3.2.* From the given organizational structure, a sample KPI system has been developed for each department through defining the targets and other requirements for performance measurement system. In the first instance the company's strategic and departmental indicators were differentiated from the operational level indicators that tackled the critical issues necessary to control the operation. This resulted in a KPI pyramid that, on the one hand, reflects an overview of all the departments and their KPIs (except the operational one), and on the other not only structured the KPIs of the business processes ranging from the strategic to the operational level, but also explained the interrelationship between the KPIs themselves (see Figure 2). The KPI structure developed this way served the basis for the later workshop discussions in the respective departments.

Figure 2 shows the KPI structure for the Production department, where the strategic and departmental level KPIs are represented in blue. The KPIs of the company's

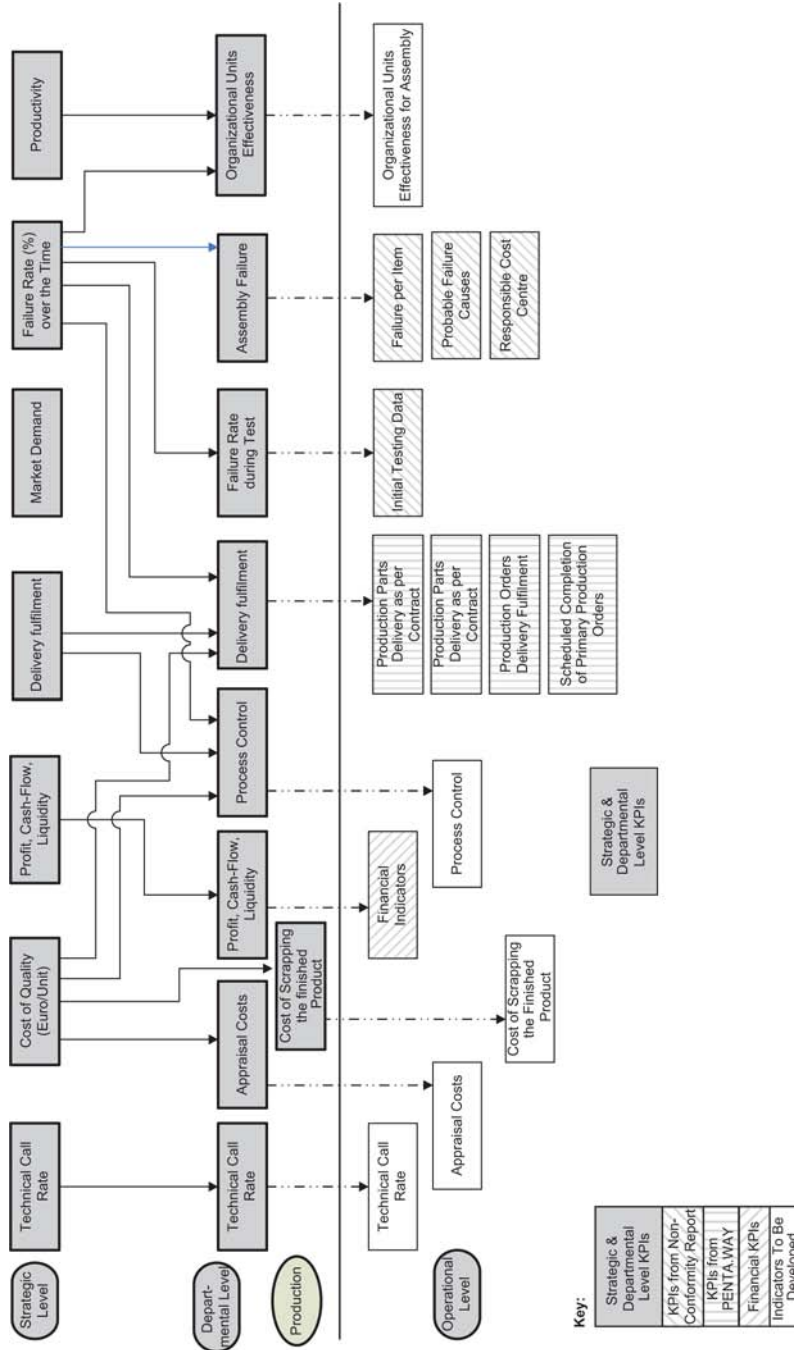


Figure 2.

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“non-conformity reporting” and IT system are displayed in yellow and green respectively, whereas financial KPIs can be found in orange. All those KPIs that still need to be developed for the company’s integrated performance measurement system are shown in purple. Based on the KPI pyramid and its developed structure, a workshop was conducted in the respective departments. The following paragraphs discussed the workshop’s detail.

*3.3.3 Step 3.3.* Each department had conducted three workshops, where employees discussed the performance measurement system and the chosen indicators extensively before they developed a consensus for the unanimous adoption of KPIs. At the outset of first workshop, the future course of action about the performance measurement system, and its associated objectives are presented to the participants. Initially every department had figured out performance measures or indicators with respect to the characteristics of the processes involved. A consistent basis could be developed through defining these performance measures. Every participant thus knew what the each performance measure is all about. Simultaneously, the participating professionals were collaborating for the selection or rejection, wherever necessary, of an indicator after discussing the various aspects and relevant effects on the respective areas. A uniform understanding of the project objectives, and proposed indicators in addition to the performance measurement system concept was the outcome of this workshop.

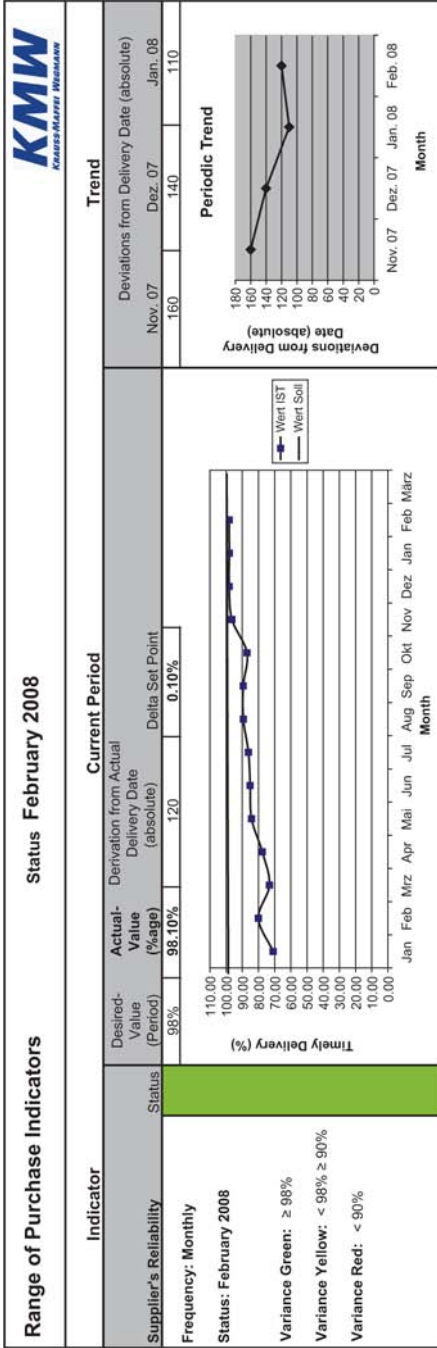
The resulting performance indicators were comprehensively described by the employees in the second workshop. Among other things, the responsibilities and the course of action for the implementation of KPIs were worked out. Subsequently the KPIs were divided into immediate, short-, medium-, and long-term with respect to the endeavor involved for their implementation. The indicators collected already were referred as immediate implementable. Whereas those that have some pre-requisite before they can be implemented are classified as short and medium level indicators. Finally the indicators that demand a high level of efforts to be acquired (e.g. the integration of a new IT system) were put in long-term category.

For the simplification sake every KPI status was displayed graphically in terms of “Traffic Signal System” next to the description of its existing position. Thus the three traffic lights colors (green – no need for any action, yellow – a review is required to take some necessary actions, red – an action is required urgently) gave instant information about the prevailing position and suggests the fundamental actions required at any point of time.

A long-term variation of indicators could be described through the trend analysis of KPI report sheet. Figure 3 depicts the KPI report sheet format explaining a sample performance indicator “Supplier delivery time”. The KPI and its current status are detailed therein. On the left side of the sheet the KPI is reported in terms of variables “Frequency, variation, and time period”, and their actual values are recorded in the middle. The existing trend, with reference to three previous time periods, is illustrated on the right side of the report. At the end of the first meeting, all KPIs were properly defined, and the action plan for their collection and implementation was worked out.

The third workshop sealed the approval for the measurement system for respective departments. The Figure 4 illustrates the same in form of a performance measurement system pyramid where the applicability of each KPI is depicted through respective colors. The business strategic KPIs are at the top of the pyramid, where financial indicators can also be seen in red alongside. The next level shows the various





Quality-based performance measurement

Figure 3.



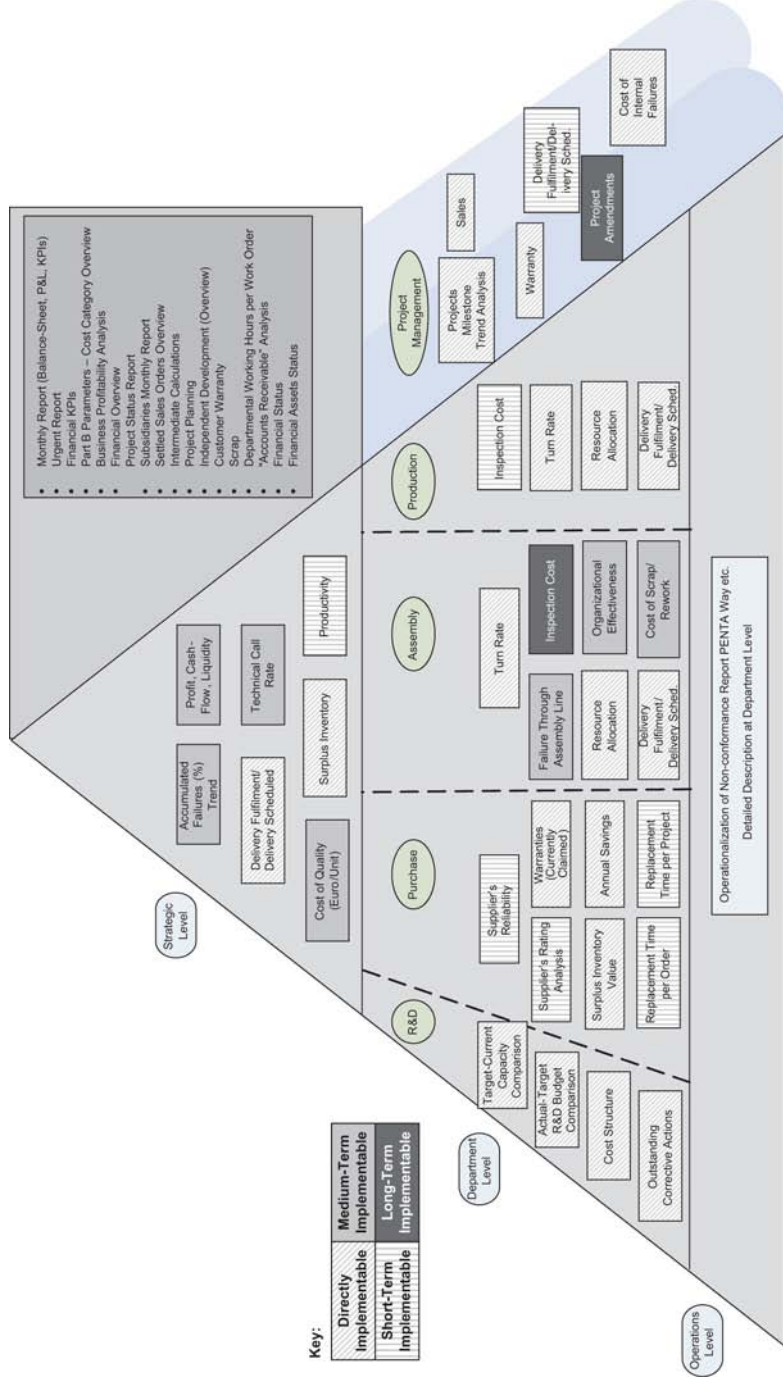


Figure 4.

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departments and their respective KPIs, however the operational level KPIs are not specifically listed. Similarly each department had developed a strategy for the implementation of defined performance indicators.

*3.3.4 Step 3.4.* In this phase, a step-wise implementation plan for the selected indicators was developed. Additionally, the KPIs were prioritized for implementation purposes through a prioritization matrix (see Figure 5). The  $x$ -axis represents the KPIs classification as per their applicability period, whereas the efforts level required for the implementation are marked on the  $y$ -axis of the matrix. This matrix gives birth to a KPIs priority list, which in turn means that an indicator with immediate applicability and relative less painstaking will be at the top of the action plan.

A uniform performance measurement system was developed throughout the organization by following the structured procedure and establishing the target-oriented performance indicators. The employee's workshop pointed out several weaknesses and improvement opportunities within the respective departments.

#### *3.4 Phase 4*

The action plan developed so far created the foundation for the implementation of the KPIs in the fourth phase. The implementation of this thorough plan had taken place in three stages – implementation of immediately actionable KPI, then those with short- and medium-term applicability, and finally the indicators with long-term practicability. This phase started with the implementation of immediate actionable KPIs as depicted by the priority list developed earlier. So in the beginning of implementation plan not much effort was needed as the immediate actionable indicators were already classified and defined by the company.

In parallel, the relevant measures required for the implementation of short-, medium-, and long-term KPIs have been prompted as per the original action plan. The idea was to create a conducive atmosphere for the adoption of a performance measurement system.

The second phase of the implementation included the collection of short- and medium-term actionable indicators. Moreover the requirements for the collection of respective indicators had also been established. Although most of data could be recorded manually, the exercise however was so meticulous that an automated data collection system was imperative for this purpose. Therefore a collaborative work with the IT section for an automation system development was the key part of this phase.

Appropriate measures and necessary solutions were suggested for the implementation of long-term KPIs. During the six-month implementation phase, all the responsible professionals were continuously consulted and kept up to date about the performance measurement system. A very comprehensive and consistent performance measurement and monthly reporting system was the outcome of the final stage. Furthermore, a course of action was set for the establishment of medium- and long-term KPIs besides their partial implementation to gradually include them in the performance indicators reporting system.

#### **4. Summary and future prospects**

The performance measurement system reflects the corporate strategy and overall business objectives of an organization. The alignment of the performance indicators with the company's critical operating factors, and the processes having bottlenecks

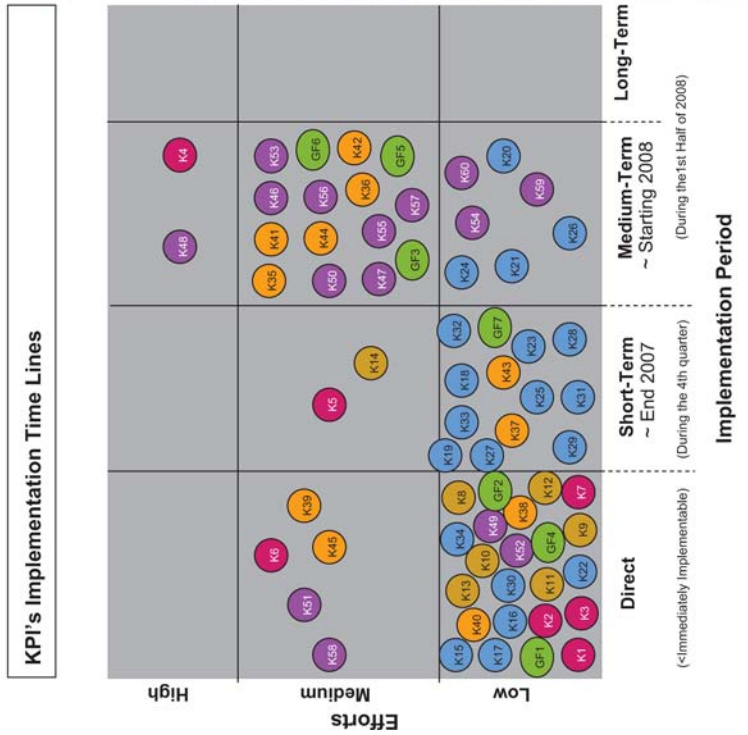
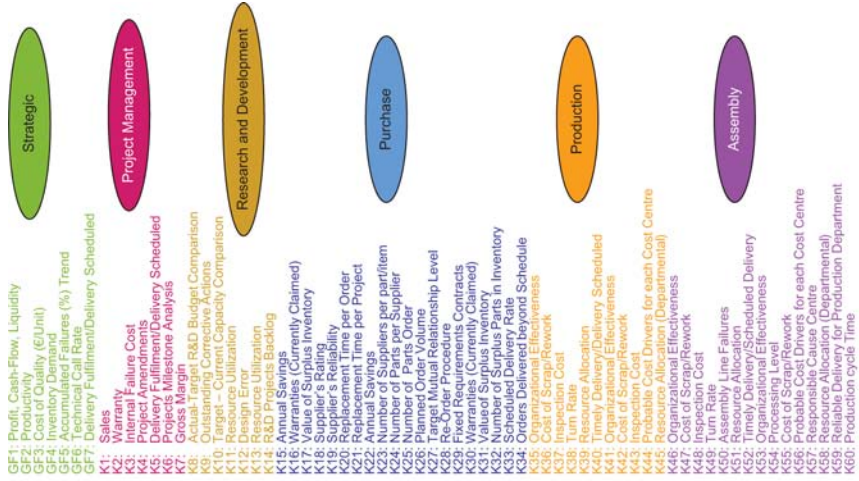


Figure 5. KPIs implementation time lines

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alongside the value chain, could result in a very compact, target-oriented, and quality-based performance measurement system. The contradiction between the strategic and operational level perspectives can be identified through the “top-down” and “bottom-up” approaches. Thus consistent planning can be ensured through sealing the information gaps.

Finally, it is affirmed that most of the employees had found the performance measurement system a very useful tool for tightly controlling the flow of their processes. It is very important to mention that this system does not mean to give way to another flood of information; instead it is designed to support the company’s decision-making process through target-oriented indicators that could be compared to the existing best practices. The pre-requisites for the installation of a performance measurement system were set up through the gradual introduction and classification of KPIs into immediate, short-, medium- and long-term.

The initial performance measurement report reflects company’s both positive and negative indicator’s trends. This early analysis enables the organization to predict the future trends, and to put the appropriate control measures in place. The system let the common worker to extend his support to the decision-making process and to recommend the appropriate control measures.

The scrutinizing and the critical analysis of the business processes during and after the implementation of performance measurement system had already got a hold of an early triumph. Moreover some indicators had changed for the better within few months.

The KPI report sheet itself provided a very sound base for rational discussion during the course of implementation phase.

Through exploiting the organizational potential, a continuous improvement of the business processes was realized, which in turn enabled an efficient and effective synchronization between the company’s workflow. The process-oriented approach assists the company to align its business processes and focus on the challenges emerging from the globalization phenomenon.

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