EyeOn
Planning & Control Solutions

Tilburg University

Strategic Scenario Planning

Linking Performance Indicators to Bottom-Line Results

Planning & control in leading organisations

An EyeOn research report in association with Tilburg University

Strategic Scenario Planning

Linking Performance Indicators to Bottom-Line Results

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Contents

1 Management Summary

Many large companies are quite capable of constructing an adequate strategic plan. They do however, struggle when trying to implement their strategic plan accordingly. As a consequence, monitoring progress towards reaching strategic objectives is an ineffective process. That raises the question how to assess and control the future performance of an organization. After all, this should be the part of the planning process and fit within the overall corporate performance strategy of the company.

One way to solve this issue is simulation. Simulation is an appropriate tool to analyze and support business activities on different levels in an organization. Simulation can be used on an operational level, on a tactical level or on a strategic level and can therefore be of great value. However, it is a fact that many organizations fail to see the benefits of simulation in the context of corporate performance management (CPM). In general, simulation is deemed time-consuming, complex, and quite expensive to develop. However, in practice, simulation provides an excellent method to study future performance without actually having to wait for real figures.

To support organizations in their search how to assess and to manage future results, EyeOn has developed the KVD Simulation Model as a practical way to investigate how the future performance of an organization can be determined by means of a what-if tactical simulation. The purpose of the KVD Simulation Model is twofold. Firstly, it provides a very useful and well-organized framework to evaluate an organization's strategic direction. Secondly, it can provide a tool to align an organization's strategic plan with its behaviour and can therefore be of great value to any organization interested in achieving what it is aiming for.

The development of the KVD Simulation Model is part of the KVD Methodology. This methodology provides a consistent top-down method and terminology to bridge the gap between an organization's strategic plan and the appropriate execution of its strategic direction. This approach helps to improve the organization's performance by aligning the organization in the execution of the strategy.

The first step in the KVD Methodology consists of the KVD Approach. The KVD Approach has been developed by EyeOn as a method to align strategy with tactics and focuses on the aspects that determine whether or not strategic objectives will be met and those aspects that determine future profitability. The KVD Approach facilitates strategy deployment throughout the organization and aligns the organization in executing strategy.

The KVD Simulation Model applies mathematical relations between the KPIs, as they result from the KVD Approach, and the Economic Value Added (EVA) Tree to simulate the effect of various tactical planning possibilities on the feasibility of certain strategic objectives. The EVA Tree represents the bottom-line result of a company.

The model is generic and can be viewed as a template that can easily be adjusted to represent the explicit characteristics of an organization. The KVD Method has been validated at Organon, part of the pharmaceutical business unit of Akzo Nobel. After performing the KVD Approach at Organon and constructing the KVD-KPI Framework, the KVD Simulation Model has been adjusted representing the explicit characteristics of Organon.

"It is the first time I have seen the production targets translated into P&L statements as in the KVD Simulation Model." - Martijn Poels (Controller Global Manufacturing) -

"The KVD Simulation Model is an excellent method to perform what-if analyses on the bottom-line result." - Robbert van Heekeren (Executive Director Finance and Control) -

2 Introduction

> "Strategy without tactics is the slowest route to victory. Tactics without strategy is the noise before defeat". (Sun Tzu, 500 BC.)

However originally used in a military context, this quote by Sun Tzu, a Chinese general of 500 BC, pinpoints the problem that many organizations are facing: how to make sure the organization's strategic objectives are obtained by defining and implementing the right tactics or plans.

Planning is not about creating a singular projection of the future. The added value of any planning activity is to review and analyze the impact of risk on assumptions, initiatives and targeted results. Plans must explicitly deal with uncertainty. A range of scenarios can provide management with a basis of assessing the feasibility of alternative strategies. Simulation can be considered an adequate tool to determine if certain projections or expectations will be achievable. The difference between scenario planning and simulation is not always clear. Scenario planning considers different business alternatives, whereas simulation is a technique that can perform scenario analysis. Moreover, simulation enables sensitivity and what-if analysis to further assess uncertainty.

In practice few companies systematically integrate scenario planning and simulation into the planning process. There appear to be 3 reasons for this:

- Simple (behavioural) fear of the unknown. Many people and managers react to uncertainty with denial and unconsciously take deterministic views of the future.
- Lack of time. Most organizations work up to the last minute simply to complete a single plan and view of action. There is no time left to evaluate alternate courses of actions.
- Lack of adequate training in developing scenario plans and techniques. Using the outcome of analytical techniques and models for taking decisions in inherently uncertain situations requires both education and experimentation.

Many executives acknowledge that the process of planning is often more important than the end result. Planning provides management with a platform to discuss the following basic questions. Where are we going? And how are we going to get there? What-if things do not turn out as planned? Simulation can provide the answers to these questions.

Simulation models can also enhance the validation of targets while building trust and consensus on plans and forecasts. Because future plans are actually calculated, the management feels comfortable taking decisions regarding these future plans. As important as the simulation results is the process of building the simulation model and the business scenarios. Since a simulation model should reflect the actual organization, it requires extensive knowledge of which aspects drive value and the assumptions that lie underneath. Simulation can support the analysis of risks and opportunities that can occur during a forecast or budgeting period and during a longer planning horizon.

The white paper is the joint result of a research study performed by EyeOn and Tilburg University, the validation and implementation of the simulation model by Organon as a final step during the research study. Many thanks go to Prof. Jalal Ashayeri, MSc PhD (Econometrics and Operational Research, Tilburg University), Robbert van Heekeren (Executive Director Finance and Control, Organon), Jan-Remt Mellema (Global Strategy & Portfolio Management, Organon), Martijn Poels (Controller Global Manufacturing, Organon), and Edward Stelmakh (Area Sales Controller, Organon) for their participation.

This paper presents a generic approach to driver-based modelling and simulation to support strategic and tactical planning and managerial decision-making. It is called the KVD Simulation Model where KVD stands for Key Value Drivers. The KVD Simulation Model is a powerful method for managers to gain insight on the factors that drive bottom-line results. Not only can they prepare important decisions in the planning process, but they can also rely on actual figures while doing so.

The next chapter elaborates on the subject of strategic risk, the main trigger behind the development of the KVD Simulation Model. Chapter 4 considers the EyeOn Approach and briefly addresses the KVD Approach, after which the position of simulation and the structure of the generic KVD Simulation Model are discussed. Chapter 5 contains a case study of Organon, the pharmaceutical business of Akzo Nobel*. The explicit KVD Simulation Model estimates the bottom-line result of Organon based upon its Key Value Drivers (KVDs) and Key Performance Indicators (KPIs) corresponding to Organon's strategic objectives. Using this model, it is possible to perform what-if scenario analyses to measure the effect of changes in the KVDs and/or KPIs on the Economic Value Added. Chapter 6 presents the seven requirements for a good simulation model based on conclusions drawn in this research.

*) In March 2007, Akzo Nobel announced that they had accepted an offer for the purchase of its wholly owned subsidiary Organon BioSciences from Schering-Plough. This transaction is expected to close in the 2nd half of 2007.

3 Strategic scenario planning as part of CPM

3.1 Introduction

Organizations have to create a link between developing strategic objectives and making an adequate tactical planning to ensure these strategic objectives are met. In fact this is part of strategy implementation. The figure below positions the results of the KVD approach and the scenario planning and analysis in the Corporate Performance Management (CPM) framework. This enables a closed-loop process that starts with understanding where the organization is today, what the strategic direction is, what targets should be set and how resources must be allocated to achieve these targets.

Strategy implementation is a topic that can be explored extensively. Many companies are capable of defining their strategic objectives quite explicitly, but fail to implement them successfully.

> "The ratio of books in print on the subject of strategic planning to those on the subject of strategic implementation is 70:1" (McKnight, 2001)

It is not only crucial to translate strategy into a tactical plan adequately, it is also highly important to proactively manage corporate performance.

By performing scenario analyses at the top level of an organization, strategic dash boarding and clear target setting on value drivers and performance indicators are facilitated throughout the entire organization. It is not only possible to react on environmental or internal factors that influence bottom-line results, but also to anticipate or even prevent negative effects.

Besides the fact that strategy implementation is difficult to manage, there is another

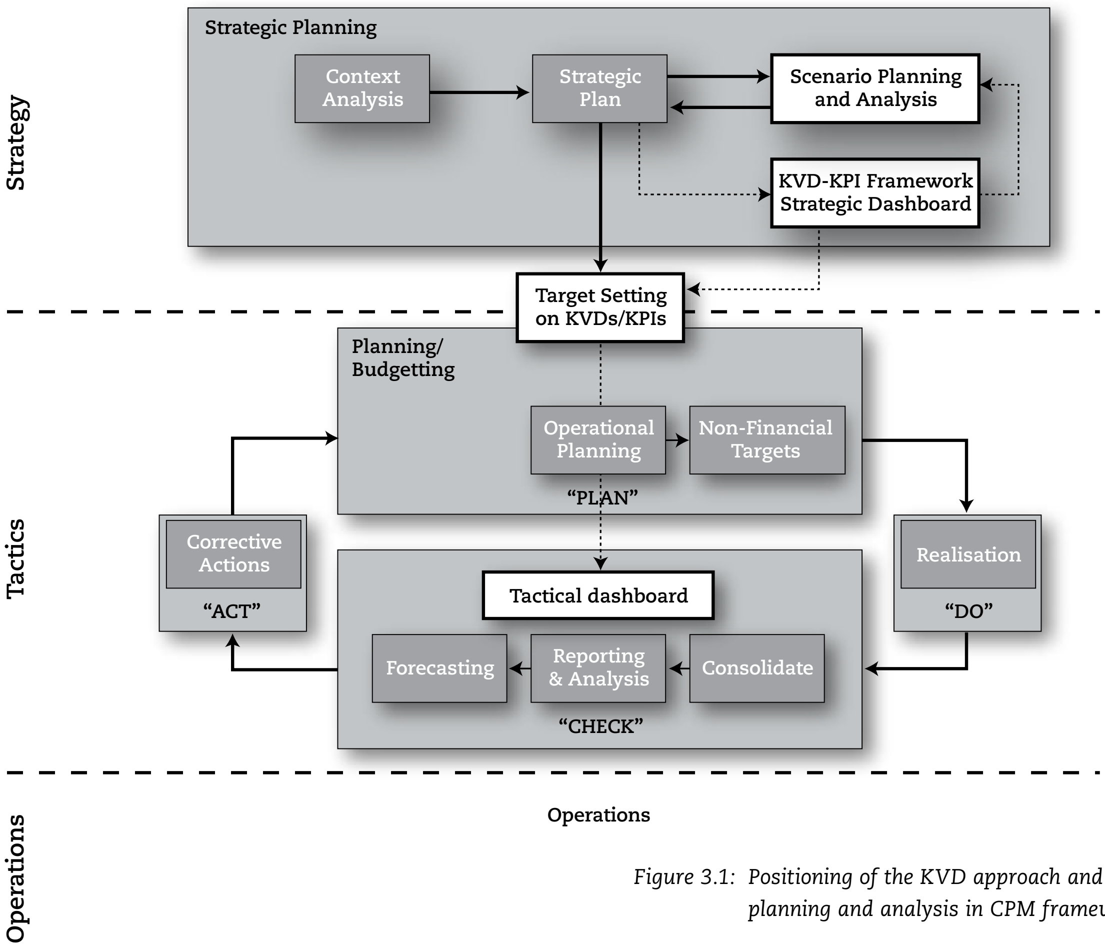

Figure 3.1: Positioning of the KVD approach and scenario planning and analysis in CPM framework

factor that makes the process of strategy implementation more complex. Since the transformation of strategic objectives into tactical settings is not straightforward, the implementation of strategy evokes risks. It is inevitable that risk occurs when translating a strategy of a company into a tactical plan. Of course, for a company it is highly important to measure and, if possible, to manage the risk the company faces while it is trying to reach its strategic objectives.

The concept of risk results from the recognition of future uncertainty. It is quite impossible to know what the future will bring in response to a given action today. The action performed today can have different outcomes and that in fact creates risk.

3.2 Identifying risk

The concept of risk can be reviewed in many different ways. In this paper we divide risk into two views, external and internal risk. Risks within the control of a company are referred to as internal risk, whereas risks outside the control of a company are referred to as external risk.

Examples of internal risk are production risks and risks in the area of planning and control. Examples of external risk are demand risks, supply risks and environmental risks like e.g. union strikes, terrorist attacks and a tree limb falling onto a power line. Some risks can be predicted, managed or even prevented. A typical example of an external risk that can be adequately responded to is the currency exchange risk. Fluctuations cannot be controlled, but a company can anticipate the negative effects of these fluctuations.

When discussing risk management within a company, the major focus is often how internal risk affects the financial bottom-line results of that particular company. External risk however, requires a somewhat broader perspective. To be able to adequately respond to these risks it is relevant that these risks are identified.

After identifying potential risks, they have to be quantified and assessed. It is important to be able to assess risks in order to take appropriate actions when necessary. In the context of the KVD Simulation Model, risks can be assessed and measured by the key performance indicators as they result from the KVD Approach.

3.3 Strategic risk management in practice

Two different kinds of risk have been identified. Now it is highly important to manage these kinds of risk to optimally support business activities.

Internal risk
When dealing with internal risks it is highly important to tackle the causes of these risks. Since these risks occur in the company’s control, it is best to prevent these risks instead of waiting for the consequences. There are different ways to tackle internal risks.

Research (Friedman and Essaye, 2005) shows that many CEOs do not develop their risk management policies themselves but let “the financial guys” do it. However, it is advisable that strategy risk management is not just delegated to the financial department, but is acknowledged as a high level priority within a company and is adequately responded to.

The realization that risk management is a crucial factor determining the success of a company is more and more present in companies struggling to implement strategy. Integrated risk management has recently become a practical way to mitigate risks within a company. Integrated risk management is the identification and assessment of the collective risks that affect firm value and the implementation of a firm-wide strategy to manage those risks (Meulbroek, 2002).

Although indeed a company is likely to benefit from a firm-wide risk management strategy, research (Noy and Ellis, 2003) indicates that risk strategy is not always consistent across all organizational activities within a company. It is a surprising result that corporate risk strategies vary across activities in the same company.

External risk
Because of increased globalization, widening political reach and the market producing and consuming economies, external risks are increasingly present in every company.

As opposed to internal risks, external risks cannot be prevented. However, it certainly is possible to mitigate external risks. The main objective after identifying external risks is to reduce the negative effects of these risks.

Hillman (Hillman, 2006) lists several strategies and approaches to mitigate external risk while improving a company's performance. Many solutions address inventory levels as a critical component of a supply chain strategy that can help reduce risk. Some other elements are hedging strategies, forecasting techniques and the leverage of contract-management tools.

3.4 Strategic risk management by scenario analysis

In general, one of the most important elements of good strategic risk management is the analysis of risks. When risks are identified the organization should analyse the risks by understanding the effect on the business. Risks can be analyzed in various ways. An important distinction is the division of analysis tools in subjective and objective methods.

- Subjective methods like SCOR (Supply Chain Operations Reference Model) and utility theory are examples of known and widely incorporated tools to analyze risks.

- Besides subjective methods, objective methods can also be used to analyze risks. Simulation is a typical example of an objective method.

The major advantage of using simulation as opposed to subjective methods or other objective methods is the fact that simulation is a dynamic method instead of a static one. Simulation cannot only consider time aspects, but can also incorporate and reflect more complex modelling issues like variability, uncertainty, and interdependencies between processes.

In the context of strategy risk management, simulation can certainly provide an advantage when trying to mitigate or even prevent risks while implementing strategy. Especially what-if simulation is useful to recognize and understand how the different risks affect the bottom-line results of a company. What-if simulations apply scenario analyses to determine what will happen if circumstances change. A scenario analysis is basically a process to analyze possible future events by considering alternative possible outcomes, which are defined in the different scenarios. Scenario analyses facilitate improved decision-making because outcomes and implications of decisions can be carefully considered.

Before a scenario analysis can be performed, first several scenarios have to be defined. Scenarios rely on identifying and examining the drivers of strategy and uncertainty – those factors that are essential to accomplish strategy. For each of the main drivers of strategy several scenarios can be defined. Scenarios for an economical driver like growth are for example: rapid growth, moderate growth or slow growth. A scenario could also be based on a business case like e.g. new product introduction.

When evaluating scenarios, two aspects have to be kept in mind: the probability that a particular scenario will occur and the impact of that scenario on the business. Moreover, scenarios should be typically based on goals, key value drivers of the business that are used in the strategic and tactical planning process. Therefore, the approach to develop a model for scenario analysis should start with identifying the value drivers based on the strategic objectives. This first step to scenario analysis in a simulation model is further explained in the next chapter.

4 EyeOn approach to strategic scenario planning

The EyeOn approach clarifies the strategy implementation process in a highly structured way. Before the actual simulation model can be developed, the aspects that drive value first have to be identified. Therefore, the first step in the EyeOn approach is to conduct the KVD Approach. The KVD Approach identifies the relevant key value drivers and key performance indicators that are of importance in corporate performance management. To be able to support tactical decisions, the second step is to develop a model that is able to quantify the future result of a specific action or decision taken today.

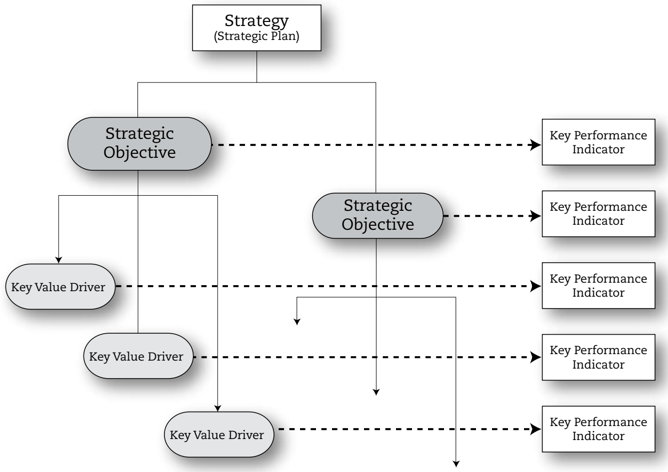

Figure 4.1: Part of the KVD Overview

4.1 Key Value Drivers (KVD)

In practice, many organizations do not face serious problems while setting their strategic objectives. In fact, organizations are often quite experienced in determining their long-term goals. However, translating their strategic plan into a tactical planning that achieves their strategic objectives has proven to be very difficult. Therefore, EyeOn has initiated and developed the KVD Approach. The KVD Approach provides organizations with a framework designed to align strategic and tactical planning with the management reporting process. Furthermore, the KVD Approach results in improved business and company performance as strategies have been successfully implemented.

The KVD Approach consists of three basic steps. In all steps, interviews are conducted with senior executives of several functional areas of the organization to determine the company's specific strategic objectives, key value drivers, and key performance indicators. The interviews result in a KVD Overview, clearly listing all relevant strategic objectives, value drivers and performance indicators.

After the interviews, a KVD-KPI Framework is constructed that links the performance indicators to EVA. The KVD Simulation Model uses this framework to deduct the changes from the financial result when altering one or more strategic objectives.

For a more detailed description of the KVD Approach, see the EyeOn Whitepaper 'From Strategy to Action – Planning for Value'.

4.2 Key Performance Indicators (KPI)

The EyeOn approach uses the EVA Tree to reflect the bottom-line results of an organization. The KVD Simulation Model uses mathematical relations between the KPIs and the EVA Tree to simulate the effect of various tactical planning possibilities on the feasibility of the strategic objectives.

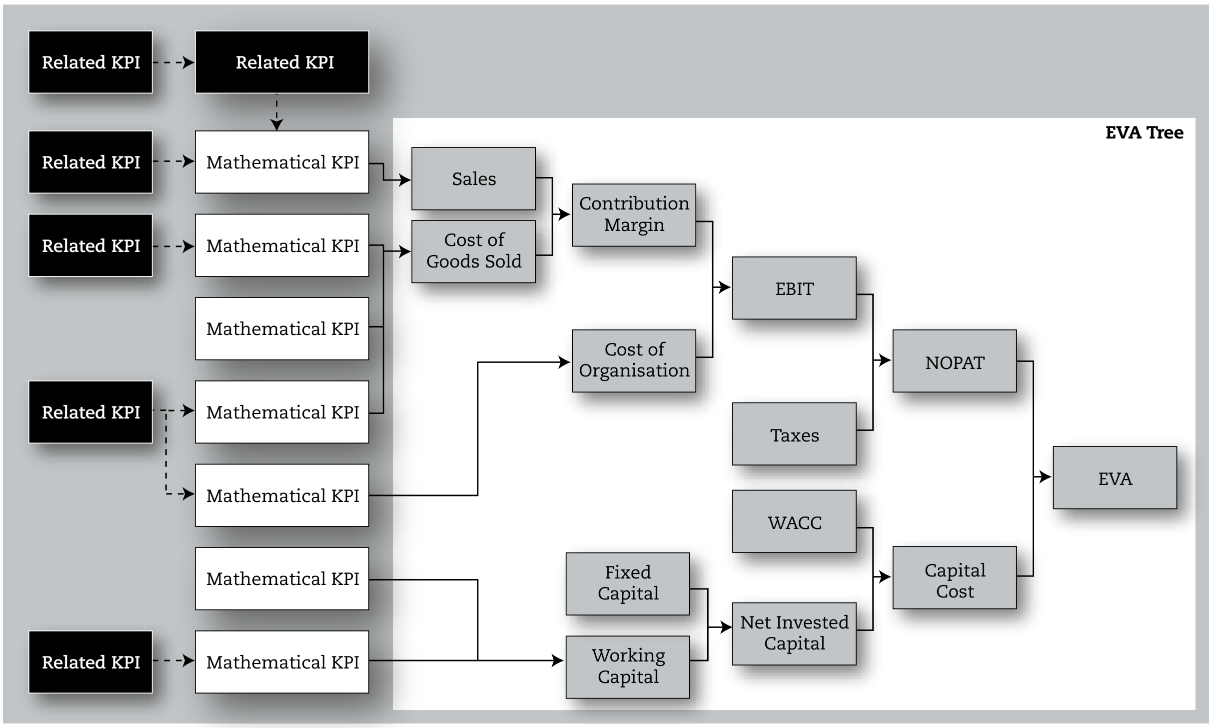

Figure 4.2: The performance indicators linked to EVA

A distinction has to be made between mathematical and related KPIs. The mathematical performance indicators have a direct mathematical relation to the EVA Tree: the financial consequence of change can be calculated. The related KPIs also affect the financial results, but not in a direct mathematical relation. They merely influence the mathematical performance indicators or have an ambiguous relation to elements of the EVA Tree.

It is not necessary to include all KPIs in the KVD Simulation Model. A selection needs to be made to discern the most important and most relevant KPIs. One of the possible methods that can be applied to rate the relevance of each individual KPI is the Analytic Hierarchy Process (AHP).

The AHP is an appropriate prioritization application and in essence is a multi-criteria decision-making method that was originally developed by Prof. Thomas L. Saaty. In short, it is a method that derives ratio scales from paired comparisons. The comparisons can be made on an objective basis, but also on a subjective basis. The method starts with the structuring of a problem. Since the KVD Approach has already provided a hierarchical structure in the KVD-KPI Framework, this step can be discarded. The next step in the AHP methodology uses pairwise comparisons in combination with the scale of relative importance to assess the relevance of all KPIs. In the context of the KVD Simulation Model, the AHP method uses subjective comparisons to determine the relative weights of the KPIs. Only the most relevant KPIs are implemented in the KVD Simulation Model.

4.3 KVD Simulation Model

4.3.1 The generic KVD Simulation Model

The generic KVD Simulation Model consists of a simulation menu, an input module, an output module, and a module displaying an overview of the main inputs and outputs. Each module contains several sheets.

Simulation menu
The first sheet of the file containing the KVD Simulation Model is in fact a simulation menu. This menu enables the user to choose a required module. By selecting the name of the desired module, that module pops up.

Input module
After the simulation menu, the first sheet of the input module shows the KVD-KPI

Framework to graphically represent the outcome of the KVD Approach. The KVD-KPI Framework also clearly depicts the relations between KPIs, and between KPIs and the EVA Tree.

The following sheets of the input module depict the input parameters for various kinds of scenarios. In general, these sheets of the input module are divided into three main parts. The first part depicts the What-If Parameters that will be used for the scenario planning: this section displays the values of those parameters that the user would like to analyse the effect of on the bottom-line results. These values can be altered. The second part consists of Static Parameters. Static parameters are not variable in the simulation. However, they are necessary to calculate the different elements of the EVA Tree. If the user does not want to include Tax changes in the different business scenarios, Tax is an example of a static parameter. This is an input necessary to calculate the NOPAT and EVA, but it is fixed and therefore not interesting for e.g. a sensitivity analysis of the inputs. When all values of input parameters are determined, the different elements that construct the EVA Tree have to be calculated. The last section of a sheet of the input module therefore denotes the calculation.

The second sheet of the input module depicts the input parameters of the base case scenario of an organization. This sheet is called ‘Base Case’. The user cannot alter the values on this sheet. The base case scenario reflects the expectations if everything goes as planned.

After the base case sheet there are a few sheets that denote the values of the input parameters per scenario. The user can name these sheets. The user can also add or delete input sheets depending on the number of scenarios the user wants to evaluate. The values of the input parameters of each different scenario can be altered in such a way that the values represent the business scenario that the user wants to analyse.

In the generic model, one specific scenario is already incorporated. This is a dynamic scenario. This scenario is similar to the base case scenario, but a level of uncertainty is included. Whereas the base case has an uncertainty level of zero, the dynamic scenario can introduce different levels of uncertainty. I.e. the longer the time horizon, the less likely it is that the base case scenario represents the true values for future results.

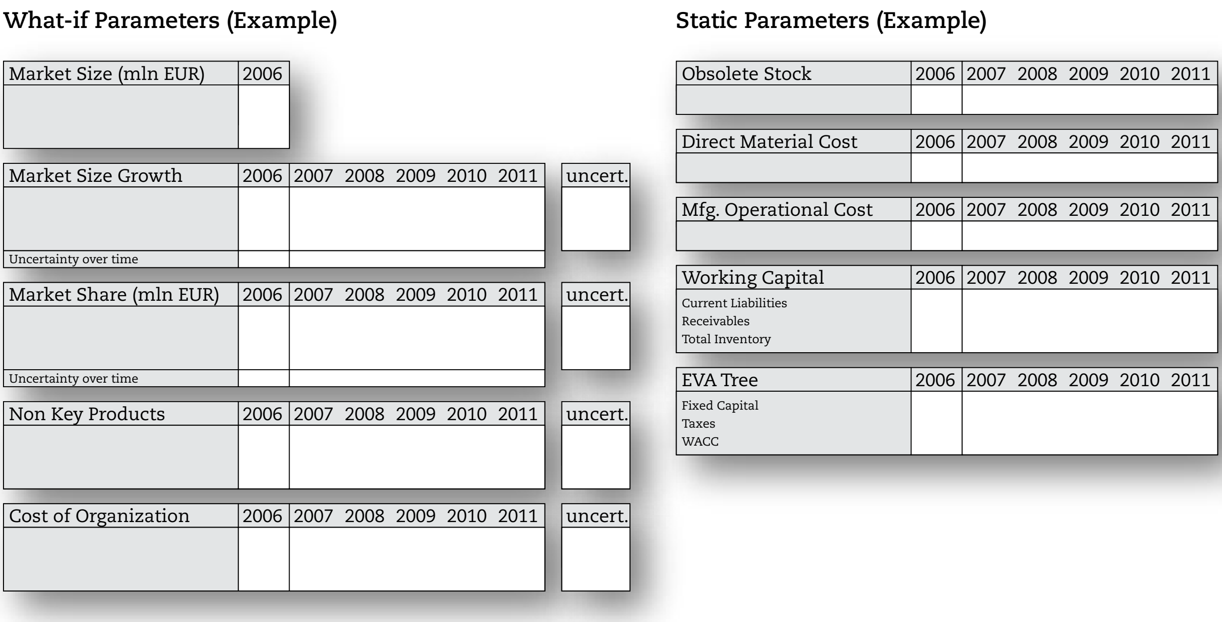

Figure 4.3: Part of the Input Module

Output (Example)

Calculation EVA 2011

	2006	2007	2008	2009	2010	2011
Sales						
Cost of Goods Sold						
Contribution Margin						
Cost of Organization						
EBIT						
Taxes						
NOPAT						
Fixed Capital						
Working Capital						
Invested Capital						
WACC						
Capital Cost						
EVA						

EVA Tree 2011

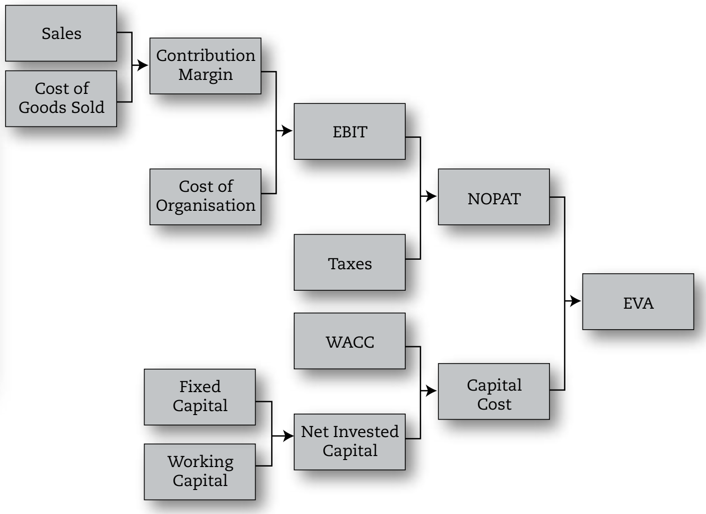

Figure 4.4: Part of the Output Module

Besides, uncertainty of different input parameters can be included in this scenario.

Output module
Subsequently, the output module depicts the outputs of each different scenario. These output sheets show the user the values of the EVA Tree as they are calculated by using the values of the different input sheets. E.g. the sheet 'Output Base Case' shows the EVA Tree as it is calculated by the values of the input parameters in the sheet 'Base Case'.

Overview output module
The last module 'Overview Output' provides a brief overview of a few output variables like e.g. Sales, EBIT and EVA. This module also gives an overview of the most relevant input parameters of all scenarios. Besides in tables, the output variables are also depicted in graphs. The various graphs depict several values of the three output variables Sales, EBIT and EVA. Four graphs are shown per output variable. For example, for sales they depict the absolute sales per scenario over the various years, the cumulative sales per scenario per year, the difference between sales of a particular scenario with respect to the sales of the base case per year, and the difference between the cumulative sales of a particular scenario and the cumulative sales of the base case.

4.3.2 From the generic model to the specific model

The generic KVD Simulation Model serves as a template for any organization. The generic KVD Simulation Model is able to incorporate the characteristics of almost every company by adding company specific information.
The case study at Organon including the development of the KVD Simulation Model specifically for Organon provides an excellent example.

Base Case (Example)

Output:

	2007	2008	2009	2010	2011	Cum.
Sales **EBIT** **EVA**						

Input:

Market Share	2007	2008	2009	2010	2011
Product A Product B etc....					

Dynamic Scenario (Example)

Output:

	2007	2008	2009	2010	2011	Cum.
Sales **EBIT** **EVA**						

Input:

Market Share	2007	2008	2009	2010	2011
Product A Product B etc....					

Figure 4.5: Part of the Overview Output Module

The generic Model does not yet include any data, only the basic mathematical relations of the EVA Tree that hold for any organization. For the model to become specific, the KVD Approach first has to be conducted to understand the key value drivers and their key performance indicators. The key performance indicators are in fact the highly company specific information that the model needs to create a link between the strategic objectives and the EVA Tree. Although the mathematical relations linking key performance indicators to the EVA Tree can be company specific, the basic structure and set-up of the model is to a large extent generic. Therefore, the generic model can be used as a template for any organization.

5 Case: Organon

5.1 Introduction to Organon

Organon, the pharmaceutical business unit of Akzo Nobel, is the largest innovative biopharmaceutical company originating in the Netherlands. Since the foundation in 1923, Organon has always been strongly scientifically oriented. Organon researches and investigates innovative medical products. It sells products in more than 100 countries all over the world and is represented by subsidiary companies in more than fifty of them. Moreover, Organon strives to register its products all over the world.

In 2006 Organon realized a turnover of € 2.611 million, which is 69 % of the total turnover generated by the pharmaceutical business unit of Akzo Nobel. Momentarily, Organon has more than 14.100 employees, spread over more than 60 countries. In the Netherlands, approximately 5.000 employees are active. The Netherlands also accommodate a large part of the main office of Organon as well as several of its largest production- and R&D-sites.

In March 2007, Akzo Nobel announced that they had accepted an offer for the purchase of its wholly owned subsidiary Organon BioSciences from Schering-Plough. This transaction is expected to close in the 2nd half of 2007.

Organon presents itself as being an innovative organization:

> "With around 19% of revenues invested in R&D, we continue to focus heavily on our product pipeline." (Toon Wilderbeek, General Manager Organon, Akzo Nobel Annual Report 2006).

Therefore, the R&D department of Organon is an important aspect of the entire organization. The structure of the R&D pipeline of Organon can be seen in Figure 5.1.

5.2 Scope

It is very important to determine the scope of the KVD methodology. This is due to the fact that while one executive can decide to list his strategic objectives, KVDs and KPIs for the whole organization, the other can consider e.g. only one business unit. Therefore, the scope of the KVD Methodology has to be determined explicitly before the interviews of the KVD Approach are conducted. The representatives of Organon have agreed on the following scope:

The scope of the KVD Methodology includes that decisions or actions that affect the bottom-line results of Organon in the next five or six years.

For Organon, this is an important distinction, because Organon has to face an R&D pipeline that requires an average of 12 years for a product to materialize on the market. Therefore, the KVD Approach only considers the products in the R&D pipeline that are expected to enter the market within the next five years and the products that are already on the market.

Besides setting the scope, other assumptions have to be made. The most important ones concern market perception and market size approach.

First it has to be determined what line of approach is used to estimate the available

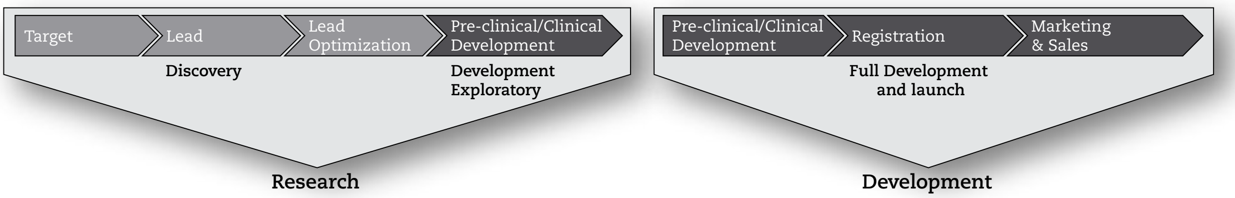

Figure 5.1: Structure of the R&D pipeline of Organon

market for sales. The market can be approached from different angles. These different views are of the whole of Organon, per therapeutic area, per treatment type, or per key product. The KVD Simulation Model presents the market per key product.

Organon also discerns different market perceptions. Figure 5.2 displays a funnel vision of the various kinds of market perceptions. The numbers in the figure are purely fictional. First, there is the disease area. This is the number of people that have a particular type of affection. Only a percentage of these people are diagnosed. This is the diagnosis rate. Of this diagnosis group, only a certain percentage is treated, of which a particular percentage complies with the treatment. Not all people persist in the treatment, while others simply drop out. What remains is the actual patient share.

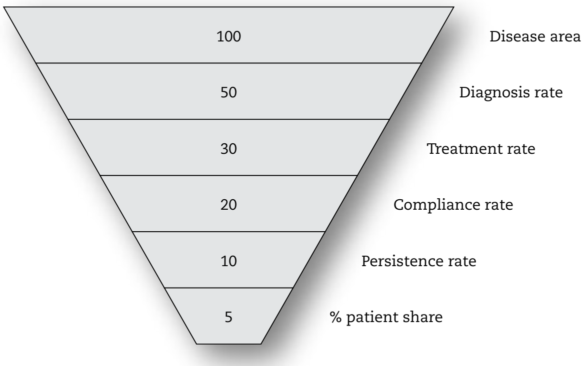

Figure 5.2: Funnel vision of different views of market size

The simulation model takes into account the disease area and the actual patient share. To prevent complexity in the model, the other perspectives are not taken into account.

5.3 The KVD Approach at Organon

The KVD Approach is conducted at Organon by means of interviews with several key stakeholders in different functional areas within Organon. The persons interviewed are:

- Robbert van Heekeren, Global Finance and Control.
- Dr. Jan-Remt Mellema, Global Strategy & Portfolio Management.
- Martijn Poels, Global Manufacturing Controller.
- Edward Stelmakh, Area Sales Controller.

5.3.1 The results of the KVD Approach

The participants have performed the three steps in the KVD approach individually. Each of them has listed the strategic objectives, key value drivers, and key performance indicators he thinks best capture the strategic direction Organon intends to follow in the next few years. To demonstrate the outcomes of the KVD Approach at Organon, Figure 5.3 presents a single strategic objective, specified into key value drivers and key performance indicators.

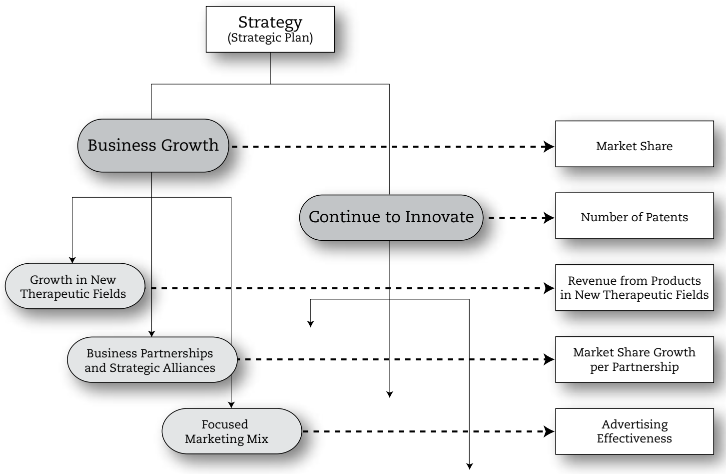

Figure 5.3: Part of the KVD Overview for Organon

5.3.2 The performance indicators and mathematical relations

Now all strategic objectives, KVDs and KPIs are determined and presented in the KVD Overview, the key performance indicators can be linked to the EVA Tree. Since the KVD-KPI Framework is constructed around three levels: related KPIs, mathematical KPIs and the EVA Tree, the distinction has to be made between related and mathematical KPIs. The related KPIs do not directly influence an element of the EVA Tree in a clear mathematical way. However, the mathematical KPIs have a direct effect on the EVA Tree. The related indicators are incorporated in the KVD-KPI Framework, but are discarded while constructing the KVD Simulation Model.

A part of the Organon KVD-KPI Framework is depicted in Figure 5.4. KPIs with white labels have a direct relation to the EVA Tree, while black ones do not.

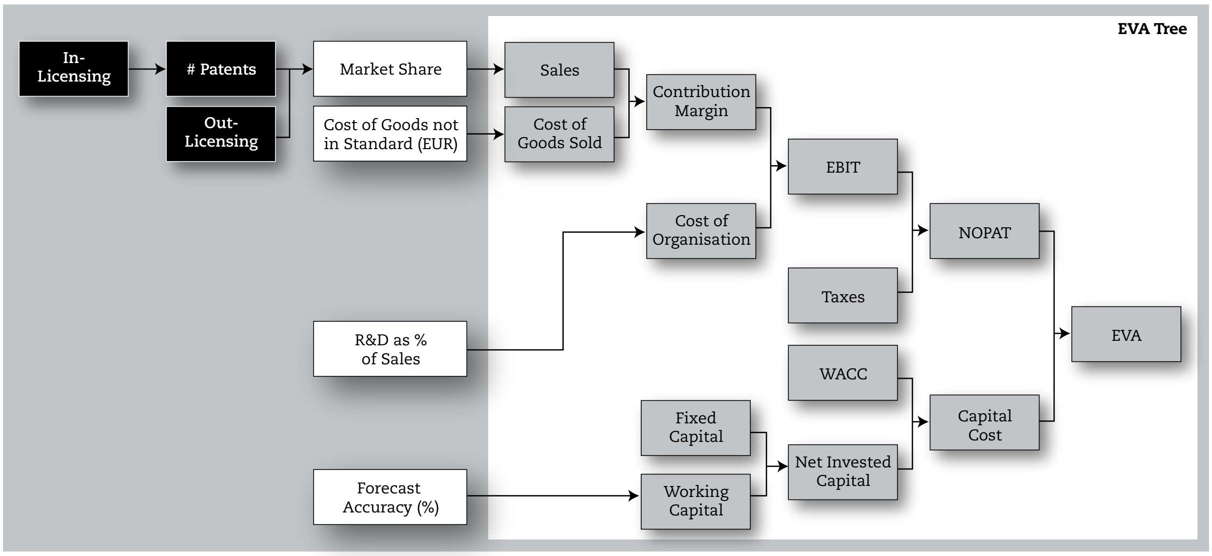

Figure 5.4: Part of the Organon KVD-KPI Framework

5.4 KVD Simulation Model for Organon

Based on the outcomes of the KVD Approach, the KVD Simulation Model is constructed according to the specific characteristics of Organon. The scenarios as defined and presented in this white paper are examples and do not reflect Organon's expectation of the future!

5.4.1 Implementation at Organon

Validation is the process of determining whether a simulation model is an accurate representation of the system for the particular objectives of the study, while verification is concerned with determining whether the assumptions of the simulation model are correct. First the KVD Simulation Model is verified, after which the model is checked for its validity.

Building a model using a commercial simulation package enhances the verification of the model, because it limits the amount of programming that would otherwise be required. Since the KVD Simulation Model uses @RISK for its simulation runs, this already partly verifies the model. A technique that is often used to further verify a simulation model is to run a simulation under a variety of parameter settings and to check if the output parameters change in a reasonable way. This boils down to an output analysis to check whether or not alterations in the input parameters affect the outcomes as expected.

Now the KVD Simulation Model is verified, it can be validated. A very important step in validating a simulation model is to collect the right data and information about the system. The aspect of gathering the right information has been covered by the interviews in which the mathematical relations were investigated. A model can also be validated by a structured walk-through of the simulation model. A positive side effect of this approach is that it promotes ownership of the model by the management team. Since the various participants involved in the validation and verification process represent different aspects of Organon, their approval safeguards the quality of the model.

5.4.2 Scenario definition

Before a simulation can be performed, first several scenarios have to be defined. Two scenarios have already been incorporated, a base case scenario and a dynamic scenario. Below, they are explained in more detail. Besides, the two standard scenarios, one can define other business scenarios. The KVD Simulation Model allows for these additional scenarios to be defined and named by the user.

The participants of Organon have indicated that they would like to analyse several variations of the dynamic scenario. Therefore, the third and fourth scenarios reflect the same values of input parameters as the base case scenario, but with differences in uncertainty to determine how these alterations influence the bottom-line results.

The first scenario depicts the base case scenario. This scenario calculates outputs based on the expected values of future inputs. This scenario analyses what happens if everything occurs as expected. This scenario is very suitable to compare the other scenarios with to get a clear idea of how alterations or future uncertainties affect the bottom-line results with respect to the expected course of events. Because the base case scenario does not incorporate uncertainty, all Monte Carlo simulations result in the same output values.

Since it is not very realistic to expect that everything will go as planned, the second scenario incorporates uncertainty. In the case of Organon, two kinds of uncertainty have been incorporated in the model: uncertainty over time and uncertainty in the markets per key product.

In the third scenario Organon expects higher market shares than in the other two scenarios, and wants to see how this affects the bottom-line results. Therefore, this scenario, the growth scenario, incorporates slight changes in the values of these parameters to see how they affect the outcomes.

The fourth scenario distinguishes itself from the other scenarios because in this scenario Organon assumes that market launches of the three most promising compounds are delayed and moreover, enter the market with lower market shares. Specifically, Organon wants to monitor the effects of problems while introducing new products on the market. An appropriate name for this scenario is therefore Introduction Issues.

5.5 Results

The KVD Simulation Model depicts the results of all scenarios clearly in tables and in graphs. The tables depict the outcomes of the three most important output values, Sales, EBIT, and EVA, and those what-if parameters that the user would like to see the effects of on the main outputs. Because these inputs and outputs are displayed for all scenarios, one can clearly see how certain parameter settings affect the bottom-line results.

The different graphs show the outcomes of all scenarios per year, the cumulative outcomes of all scenarios per year, the differences of all scenarios with respect to the base case scenario per year, and the cumulative differences of all scenarios with respect to the base case scenario per year. The four graphs for the output parameter EVA are depicted in Figure 5.5. The scenarios as defined and presented are examples and do not reflect Organon's expectation of the future!

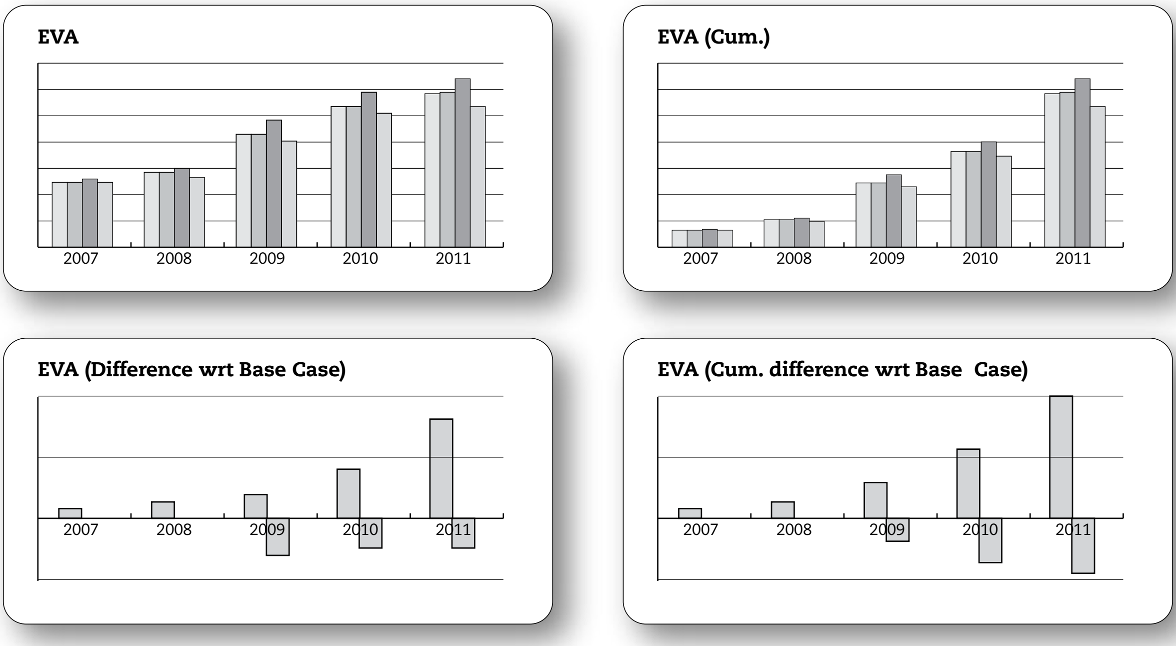

Figure 5.5: Output graphs EVA

It is possible to compare each individual scenario to the base case scenario. Below the graphs depict the values of all outputs for the growth scenario compared to the base case scenario.

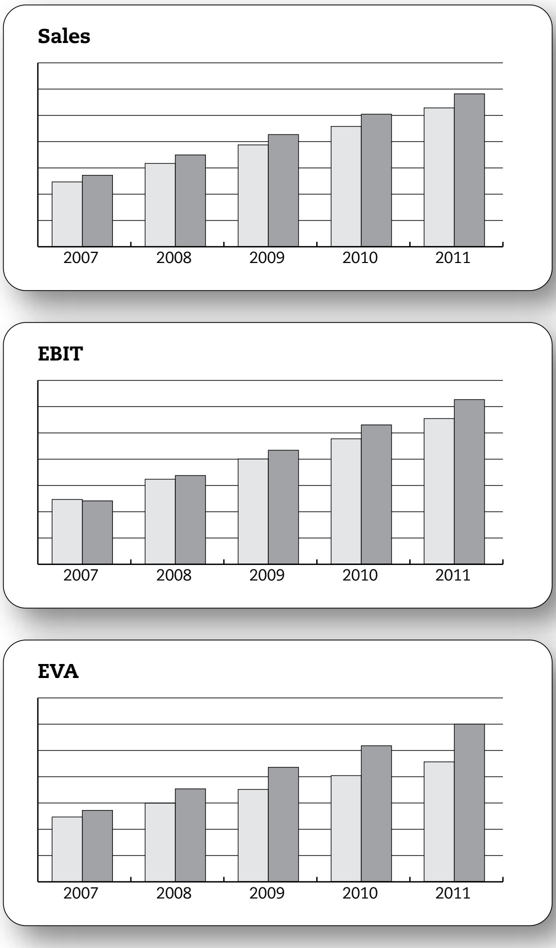

Figure 5.6: Values of base case and growth scenario

Besides depicting the output values in histograms, it is also possible to derive various statistics, and to perform sensitivity analyses and scenario analyses. E.g. a sensitivity analysis on Sales, EBIT and EVA in 2011 has shown that for Organon the most essential input parameters are the market shares per key product, the sales of products that are not key products, and the royalty income Organon receives for its out-licensing of products. Research & Development and Sales & Distribution also heavily influence the bottom-line results of Organon.

5.6 Conclusion Organon

In this whitepaper a simulation model has been developed that can assess whether or not strategic objectives are met when adapting tactical settings. Besides a fully operational model that has been developed for Organon specifically, a generic model has also been configured that can easily be adjusted to fit the characteristics of any company. The KVD Simulation Model uses the influence of key performance indicators on Economic Value Added (EVA) to determine how tactical settings affect the bottom-line results of a company.

Since the KVD Simulation Model supports the decision making process on the strategic and tactical level, and therefore has to be used at management team level, the model is user friendly and is not a difficult to understand black box. The business scenarios are easy to be defined in the model and simulation results are obtained in an understandable format.

The validation of the model at Organon has indicated that although it is not easy to capture the essence of a company in a simplified way, the model is able to represent the basic characteristics of a company without going into too much detail. This is the strength of the KVD Simulation Model. Without major complexity, the model shows the bottom-line consequences when implementing a certain tactical planning and adjusting key performance indicators accordingly. Although the model has not considered the entire pipeline of Organon due to the restricted scope, the KVD Simulation Model generates sensible and valuable results. In the future the model could be expanded to include the entire pipeline of Organon to take into account the long time horizon typical for pharmaceutical businesses.

"The KVD Simulation Model serves as an adequate starting point in the evaluation of strategy implementation." - Robbert van Heekeren (Executive Director Finance and Control) -

"The model really captures the basic structure of Organon without going into too much detail."
- Edward Stelmakh (Area Sales Controller) -

6 Seven golden rules for strategy scenario planning

Simulation is an appropriate tool to analyse and support business activities on different levels in an organization. Simulation can be used on an operational level, on a tactical level or on a strategic level and can therefore be of great value. In the past decades simulation has become a widespread modelling approach in operations research, management science, and various other application areas. However, it is a fact that many organizations fail to see the benefits of simulation in the context of corporate performance management (CPM). However, in practice, simulation provides an excellent method to study future performance without actually having to wait for real figures.

For a simulation model to be effective and useful for strategic scenario planning, however, it has to meet a few characteristics. A simulation model should incorporate the right balance of realism and simplicity. Whereas the ideal model should be a close approximation of the environment it is representing, it should remain understandable. More specifically, a simulation model in the context of strategy implementation should include the basic characteristics of an organization, but not in too much detail. Moreover, it should be possible for the model to be used by laymen.

Based on our experience we recommend the following seven rules for effective strategy scenario planning supported by a simulation model; rules that guarantee a transparent and understandable decision-making process:

1 Design a comprehensible model for management.

Since the target audience of strategic scenario planning and the simulation model consists of managers, the models should be understandable. Should models be difficult to comprehend, it is hard for management to trust the model and rely on the opinion of outsiders that the results of the model are the expected results of the defined strategic scenarios.

2 Ensure management defines and adapts business scenarios.

It is required that the management team defines the business scenarios. When aiming at a useful what-if analysis, it is necessary for the scenarios that are simulated to be based on events that could happen. After reviewing the results of the defined business scenarios it must be possible to easily adapt them into a new scenario.

3 Establish an efficient decision-making process

It is important that the simulation model is efficient. It is required that the model is able to run simulations of changed business scenarios on the spot and results can be obtained easily. In this way the model can be used in a management team meeting supporting efficient scenario planning and analysis and decision-making.

4 Prepare understandable reports and analysis

The results of the simulation model must be documented in an understandable management report and the output must be interpreted easily. Comparisons of the different scenarios must be presented transparently for effective decision-making. The simulation model must also support a more detailed analysis if required.

5 Ensure reliable results

Very important is that the model provides reliable results. The model must be as detailed as required to simulate reliable results. On the other hand it is important to limit the model to the relevant performance indicators in order to design a comprehensible model. This trade-off is very important and can be supported by the AHP method. The reliability also depends on the accuracy of the input data and on all mathematical relations being defined appropriately.

6 Design a flexible strategic simulation model

Change is inherent in time. Therefore, the model must be a representation of a latest known business environment; this environment is subject to change. It is therefore necessary for the model to be able to be adjusted easily.

7 Prepare a simple user interface

For a simulation model concerning strategy implementation it is crucial that the management team can easily understand it without technical support from the model builders. Therefore, a simple user interface certainly cannot be ignored when constructing the simulation model.

Definitions

- **A Key Value Driver (KVD)** is the translation of a strategic objective into how it will be achieved.
  - Variables that must be achieved or implemented successfully to meet strategic objectives and for the intended strategy of the business to succeed.
  - These variables are the few key areas where things must go right for the business to flourish. If things should not go right in these key areas, this would cause strategy to fail.
  - Synonymous to KVD are the terms critical success factor (CFS), and key performance areas.

- **Key Performance Indicators (KPI)** are quantitative measures to monitor KVDs.
  - Many things are measurable. That does not make them key to the organization's success. In selecting Key Performance Indicators, it is critical to limit them to those factors that are essential to the organization reaching its goals.
  - It is also important to keep the number of Key Performance Indicators small just to keep everyone's attention focused on achieving the same KPIs.
  - A mathematical KPI is related to the EVA tree whereas this relationship can be expressed via a calculation rule or formula.

- **Strategic objectives** express the aspiration that defines purpose or expected level of achievement of the organization.

- **Monte Carlo simulation** is a problem solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables

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About EyeOn

In 100 days EyeOn provides structural improvements in speed, efficiency and output reliability of the planning processes. EyeOn is a consulting firm specialized in designing and implementing planning solutions in complex organizations.

About Corporate Performance Management – Business Planning Knowledge Network

The knowledge network 'CPM-BP' offers finance professionals a learning network on contemporary trends and best practices in corporate performance management and business planning. CPM-BP enables the members to share experiences and learn from each other via research and benchmark studies whereas members' needs are closely reflected. EyeOn and CPM Partners have initiated the network as per November 2004.

There is a possibility to meet each other in person semi-annually during Round Table sessions. CPM-BP is targeted at large sized companies realizing at least Euro 1b sales revenues. Participating companies are amongst others: ASML, Campina, Cosun, DSM, Ericsson, FEI, Ferro, Heineken, Hero, Masterfoods, Nashuatec, NXP, Océ, OPG, Philips, Shell, Stork, TNT, TomTom and Wessanen.

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