FACTON
INNOVATIVE COST MANAGEMENT

SHOULD COSTING –

Understand Costing Structures and Identify Optimization Potential

CHALLENGES AND BEST PRACTICES

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1. SUMMARY

Today's businesses operate in an increasingly complex environment. **And it is becoming more and more difficult to understand supplier cost structures and identify optimization potential**. However, this is precisely where product and/or production costs can be reduced significantly. This is because the purchasing and cost engineering departments play an important role in effective design due to the increased number of purchased components in product manufacturing.

Insight into supplier cost structures is thus indispensable to consistently achieve the best price for purchased parts or components. In the best-case scenario, this is made possible by a **coherent purchased part price analysis** because it quickly, transparently and coherently explains the prices of individual components and enables users to compare them with the predefined target costs.

It is essential for all business divisions and locations to perform costing based on the same data and methods to achieve transparent, comparable product costs.

Enterprise Product Costing (EPC) is a management method that enables such a coherent purchased part price analysis. It considers the value each business division contributes to effective product management. Should Costing comprises the following key aspects:

- Valid, coherent benchmark data as a basis for calculation
- Standardized, realistic cost models
- Target price calculation
- Coordination of measures
- Comprehensive reporting
- Standardized calculation methods

In practical applications, the EPC approach is implemented with the help of a corresponding IT system. The EPC system defines standardized processes, calculation methods and calculation standards along with a calculation logic to promote a **uniform understanding of costs and ensure that it is possible to compare results**.

2. TARGET-ORIENTED VALUE CREATION IN A COMPLEX ENVIRONMENT

Today's businesses face previously unknown challenges in their value chain. This includes a dramatic rise in protectionism paired with a decline in resource availability and rapid technical changes arising from new technologies and materials. Moreover, manufacturers also face **increasing product complexity** resulting equally from customer requirements and the highly advanced possibilities afforded by the industry.

The digitization trend in particular is making it increasingly difficult to understand supplier cost structures and identify optimization possibilities because design engineering and production workflows lack transparency and are difficult to assess.

But this is where a great deal of the potential lies in dramatically optimizing product and/or production costs.

Due to the growing number of purchased components in product manufacturing, development, purchasing and cost engineering all have a major impact on the cost structure and therefore also the profitability of a product.

It is well known that component production comprises a wide range of factors and parameters, from the raw material price to wage cost developments to logistics costing. In some cases, these factors change on a daily or even hourly basis, particularly manufacturing steps that depend on exchange rates and raw materials. Therefore, the well-known adage "profit lies in purchasing" is absolutely correct. **Insight into supplier cost structures is thus indispensable in order to consistently achieve the best price for purchased parts or components**. This is made possible by a coherent purchased part price analysis because it quickly, transparently and coherently explains the prices of individual components and enables users to compare them with the predefined target costs. Predefined cost targets and requisite cost reductions are then easy to evaluate and compare. However, a complex environment poses barriers to target-oriented value creation in procurement:

- Many different departments contribute to value creation
- Processes run enterprise-wide
- Every department and/or location has its own file formats and systems, some of which are not compatible with each another
- The knowledge and experience of individual experts determine the success of cost optimization actions

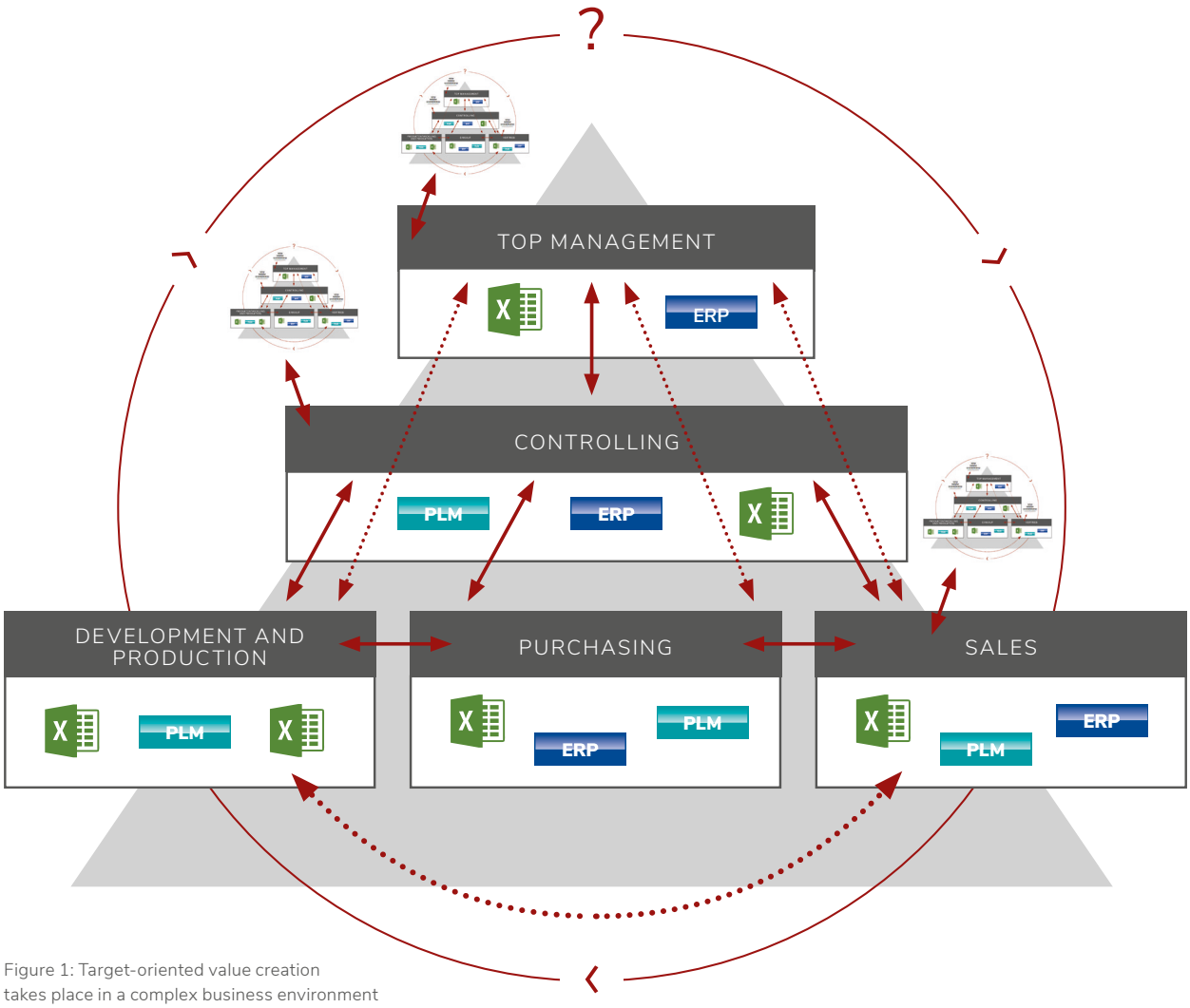

Figure 1: Target-oriented value creation takes place in a complex business environment

3. INEFFICIENT PROCESSES AND TOOLS MAKE IT MORE DIFFICULT TO ACHIEVE COST TARGET

So, among other requirements, purchasing and cost engineering must have an **analytical process** to obtain detailed insight into product cost structures and manufacturing processes within the scope of the purchased part price analysis outlined here. The following section looks at these barriers and potentially inefficient processes and tools in more detail.

3.1. LACK OF TRANSPARENT COST STRUCTURES AT SUPPLIERS

Specific cost structures at suppliers are complicated and require complex procedures to identify costs. Businesses can gather their own data on site, e.g., by

- Auditing production and accounting for existing machines
- Determining overhead costs by collecting data on “non-productive” personnel (warehouse employees, administration, etc.)
- Recording the time it takes to perform individual work steps in manufacturing, quality assurance or shipping

One consideration here is how difficult it would be to gather all of this data for multiple suppliers based on capacity issues alone. Moreover, suppliers are de facto not obliged to accept and permit outside audits. This may be the case when they wish to protect specialized expertise or intellectual property related to their manufacturing processes.

3.2. LACK OF EXPERTISE REGARDING THE MANUFACTURING TECHNOLOGIES USED BY SUPPLIERS

When evaluating purchased products, their manufacturing costs play a special role. **The cycle time of the individual manufacturing steps is the key factor in determining these costs**. This depends on a range of variables, based on the manufacturing process in question. For example, factors such as wall thickness or projected area of the part are important factors in the injection molding process. For mechanical processing steps such as drilling, the material thickness and hole diameter play a key role. Ultimately, this know-how is required in order to judge the actual manufacturing times and required machines or employee qualifications. Businesses that do not have the same processes or at least the same experts in this field must depend on the supplier's willingness to provide information.

3.3. LACK OF A DATABASE FOR USEFUL BENCHMARKS

The essential core objective is to determine the best price. The ideal framework conditions are assumed to be present in order to obtain the target costs of a product or assembly. **This "greenfield approach" enables businesses to identify and correspondingly address the general optimization potential that exists in the suppliers' quotes.** Comprehensive data records that can be used to determine the greenfield scenarios are required in order to perform such a target-oriented analysis. Enterprises need information on the wage levels in various regions of the world, acquisition prices for machines, material prices and overhead cost structures of various company sizes.

These types of databases are often difficult to build or research with a company's own funds alone. In the best cases, businesses will have saved detailed supplier quotes in corresponding Excel spreadsheets for the brownfield calculation approach over the years. Enterprises rarely have structured, centralized databases to make this knowledge available to everyone. This data only covers the areas that were relevant in the past. New materials and technologies or new regions cannot be documented here.

3.4. LACK OF KNOWLEDGE OF ACTUAL COST DRIVERS

When it comes to procuring complex assemblies, enterprises often encounter varied manufacturing processes, different sub-suppliers and location-independent manufacturing. **The more complex the products and the manufacturing supply chains are, the more difficult it is to determine which elements show the greatest optimization potential.** Simple ABC analyses fall far too short of these requirements. If optimization solely concentrates on the last stages of the process, it often misses the mark.

Detailed knowledge of the entire process is needed in order to effectively evaluate the procurement of complex assemblies. Moreover, any weaknesses in the process should be known.

3.5. LACK OF SUPPLIER INTEGRATION IN COST MANAGEMENT

Businesses often handle target costing or value engineering as internal disciplines, e.g., to define cost cutting objectives for purchasing. This approach ignores the expertise and possibilities offered by the respective suppliers. **This can only be successfully implemented if the suppliers are involved in the process early on**. Ultimately, an optimization measure can only be successfully implemented if both partners contribute to the process. Transparent structures and open communication on possible measures are key prerequisites.

3.6. LACK OF STANDARDIZATION IN PROPOSAL MANAGEMENT ON THE SUPPLIER SIDE

At the end of the day, if inquiries for externally procured parts are sent to multiple suppliers, it is the main responsibility of purchasing to compare incoming quotes and make a decision taking the various factors into account. In most cases, quotes are submitted in the suppliers' individual formats. **A comparison – in particular of cost breakdowns – is time consuming and can only be done manually**. Certain components are easy to compare (e.g., material prices); other elements – such as manufacturing processes and manufacturing costs – can be put together and presented in vastly different ways. This makes it extremely difficult for purchasing to perform the required comparisons at the detail level. **The purchasing department's options for addressing the respective elements of the suppliers' quotes are therefore limited during negotiations. Cost-cutting potential is lost in the process.**

4. BEST PRACTISE – ENTERPRISE PRODUCT COSTING

4.1. CONSISTENT ENTERPRISE-WIDE COST CONTROL THROUGHOUT THE ENTIRE PRODUCT LIFECYCLE

To master the challenges outlined above, enterprises need a **comprehensive management method, such as Enterprise Product Costing (EPC)**. EPC is a method that is designed to achieve **consistent enterprise-wide cost control throughout the entire product lifecycle**. The aim is to control costs early on, starting from the development phase, through cross-departmental collaboration. It is essential for all business divisions and locations to perform costing based on the same data and methods in order to achieve transparent, comparable product costs.

This makes it possible to actively engineer and optimize product ideas and innovations while keeping an eye on costs right from the start.

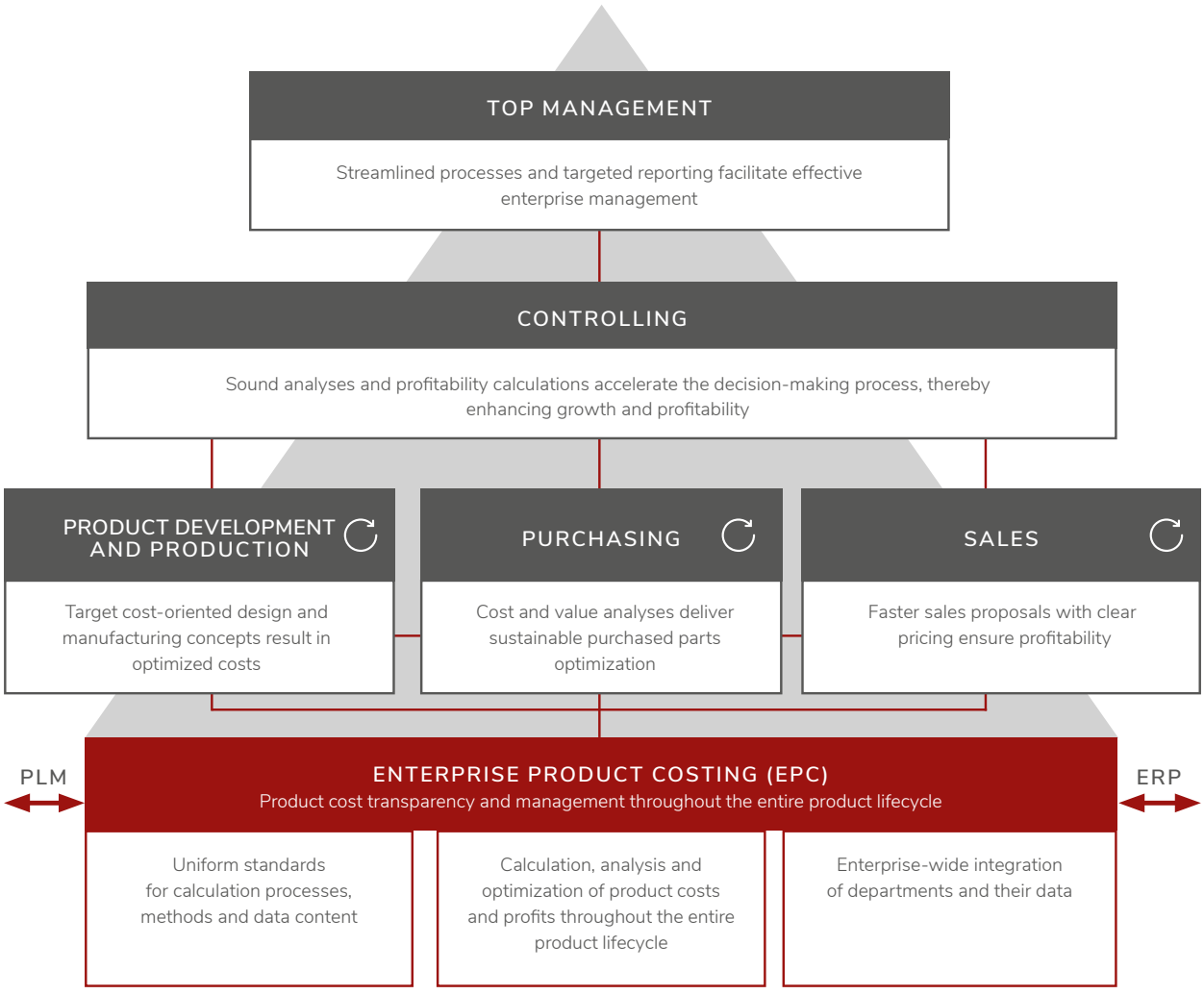

Figure 2: Enterprise Product Costing – Enterprise-wide product cost transparency

Enterprise Product Costing incorporates all of the key areas of business – from development, production, purchasing/procurement and sales all the way to controlling and executive management.

Potential for optimization becomes readily identifiable when development, product and manufacturing costs are shaped in a transparent way across all phases of the product lifecycle.

4.2. SHOULD COSTING AS A COMPONENT OF ENTERPRISE PRODUCT COSTING

To **increase the purchasing and/or cost engineering department's role in value creation**, Should Costing is implemented as a core component of the EPC approach. This entails implementing the following aspects:

4.2.1. VALID, COHERENT DATA AS A BASIS FOR CALCULATION

Target costs can either be calculated based on the greenfield approach with valid benchmark data or using the brownfield approach using data obtained from past supplier quotes or audits. These offer a fact-based foundation for optimization. What is important here is that the data used as a basis should be valid and robust enough to withstand comparison with the real supplier situation. Timeliness also plays a key role here, in particular in areas where values can fluctuate greatly (e.g., material prices and wages in some instances). Calculation owners can thereby ensure that changing framework conditions are also incorporated into the regular review of target costs.

4.2.2. STANDARDIZED, REALISTIC COST MODELS

Companies seeking cost optimization potential would do well to pay special attention to alternative manufacturing methods. To make statements that are substantiated, they can use models that enable a realistic approximation of the actual manufacturing times. These types of models consider current developments in manufacturing technology and thus provide a view of alternatives based on facts – even in cases where the specific technology may not be available in-house or experience and expertise has not yet been accumulated. Key manufacturing factors and cost drivers of the respective manufacturing process are presented transparently in the model. **The purchasing department can use this as a basis for discussing and developing options with the supplier that may lead to significantly optimized costs and investments across the lifetime of a product.**

4.2.3. TARGET PRICE CALCULATION

The main concept behind a successfully implemented costing strategy is to determine and track the target costs across various levels of a product. Different approaches, including top-down target costing or bottom-up target costing are applied.

Top-down target costing makes it possible to define ambitious yet realistic targets in the earliest stages of product development. They can be tracked throughout the various areas of business. Top-down targets ensure that products are developed within a framework that makes them "marketable."

In **bottom-up target costing**, the expected costs for assemblies and components are also determined in an early stage of product development on the basis of known parameters. This approach also shows the amount of latitude available to manufacture a market-ready product.

Both approaches gain importance for purchasing and cost engineering because they – depending on the industry – make up between 60 and 85 percent of a product manager's value creation. The earlier the integration of the procurement organization, the greater the chance that the defined goals will also be achievable.

4.2.4. COORDINATION OF MEASURES

There will generally be deviations between the defined cost targets and the quotes reported back from the supply chain. These deviations can be caused at any point in the supply chain, such as in in-house manufacturing or from the supplier's sub-supplier. **Throughout the product evolution process, these gaps can be addressed and, ideally, closed with the right measures.** There can be a wide range of measures in both a technical and commercial context here that can be used to achieve targets. A structured approach to gathering, evaluating, implementing and tracking these measures is essential in order to bring about the desired effects. The implementation levels of the defined measures can also be used to perform cost simulations, which quickly and easily determine the breadth of the possible cost optimization, thereby delivering an early indication of the achievability of the cost targets.

4.2.5. COMPREHENSIVE REPORTING

Various internal areas of the business and different departments at suppliers and other value chain participants are all equally involved in the costing process as a whole. **These stakeholders must be informed of the current status of an optimization project in a timely, understandable manner.** This ensures the necessary support for the successful implementation of cost-cutting measures. Transparency is the key to success, so that potential concerns regarding the measures to be arranged can be eliminated as quickly as possible.

4.2.6. STANDARDIZED CALCULATION METHODS

The basic approach of a structured planning and/or production process requires businesses to compare various scenarios and different suppliers under varying circumstances. This must be performed in a structured, standardized way so that factual, correct conclusions may be drawn. The only way to achieve this goal is by implementing a standardized methodology that ensures that every calculation of every possible scenario is performed in the same manner, independently of the supplier, cost accountant, time and location. If this costing method is not followed, it is not possible to create a comparison and cost-cutting potential can then no longer be identified and addressed with certainty.

4.3. IMPLEMENTING ENTERPRISE PRODUCT COSTING WITH IT SYSTEMS

In practical applications, the EPC approach is implemented with the help of a corresponding IT system.

EPC systems unify all of the enterprise's cost information in a centralized database. This ensures that every employee works with the same data.

This includes information from Enterprise Resource Planning (ERP), Product Lifecycle Management (PLM), Product Data Management (PDM), Computer-Aided Design (CAD), and Excel and external benchmark data. Cost data is collected, edited, processed and clearly presented in the application. This gives users the valid, standardized and comparable basis of data they need in order to make solid product and investment decisions.

EPC systems also define standardized processes, calculation methods and calculation standards along with calculation logic to promote a uniform understanding of costs and to ensure that it is possible to compare results.

ABOUT FACTON

The FACTON EPC Suite is the leading Enterprise Product Costing (EPC) solution for the automotive, aerospace, mechanical engineering and electronics industries. Its specific solutions offer robust answers to the requirements of executive management and individual departments within the enterprise. FACTON EPC enables standardized, enterprise-wide costing independent of location and department for maximum product cost transparency throughout every phase of the product life cycle. Businesses accelerate their costing, achieve pinpoint cost accuracy and secure their profitability.

FACTON GmbH was founded in 1998 and has locations in Potsdam, Dresden, Stuttgart and Detroit. Hasso Plattner, founder and chairman of the supervisory board of SAP AG, has supported this innovative company since 2006. The international portfolio of customers includes Airbus, Mahle Behr, Deutz, MANN+HUMMEL, Porsche, Ford and other renowned OEMs.