

New Products Equal New Enterprise? Part 2: Successful Product and Company Development within Medium-sized Business

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Abstract:

To recognize the need for change is a precondition for success. However, the implementation is most decisive. This article describes how a mid-sized company developed a new product and underwent a change process at the same time.

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In this article, we will describe a change process of an enterprise that has two product segments. Product segment A relies on an established technology and generates 90% of the company turnover. Only few competitors in the marketplace have the necessary know-how to duplicate the technology. Product segment B relies upon a relatively new process which is protected by patents. The technology is comparatively unknown in the market. Moreover, a variety of competitors possess alternative processes.

A shift in market demand initiated the need for change. Recently, demand for product segment B rose considerably and surpassed demand of the previous core product, product segment A.

A redevelopment of segment B was necessary since the existing product did not produce high enough contributions to operating income. The production costs were simply too high.

The existing product architecture caused the high production costs. The machines were already partly

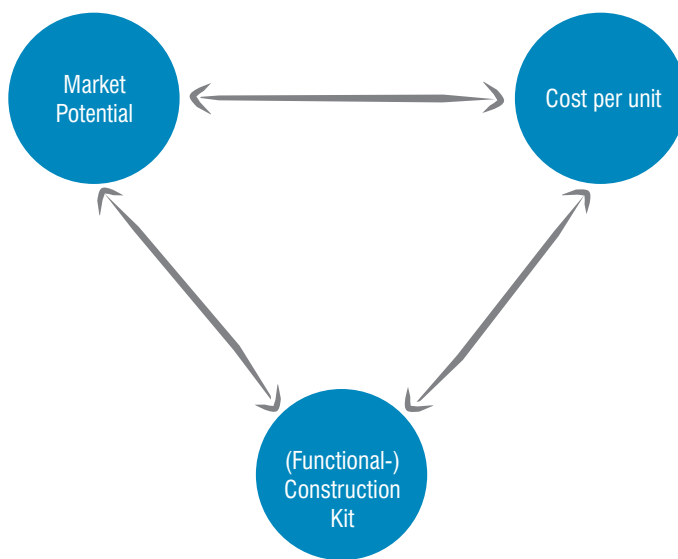


Figure 1: Parameters for Strategic Product Planning for Machine Tool Manufacturers

modularized based on the assembly needs, however little standardization existed. Moreover, the product was not configurable which led to considerable development efforts associated with each individual order. As a result the company experienced enormous pressure on the margins. In addition, no standardized construction kit existed.

To achieve adequate results with the segment in future, a new successful product had to be developed. An enterprise-wide change process was initiated. At the same time the enterprise had to quickly evolve from a specialized mechanical engineering firm into a solution provider. Schuh & Company was hired to accompany the product conception phase and drive the change process.

It Is Only Worthwhile to Develop a New Product, if a Remunerative Market Exists

Successful strategic planning of machine tools depends on aligning the parameters of market potential, cost per unit as well as scope and structure of the function kit, with the product concept. The demarcation of markets was one of the greatest challenges facing the project. On the one hand the range of possible applications for the new technology was very wide, but on the other hand, the company staff was not familiar enough with the technology to clearly include or exclude possible applications. Furthermore until the project kick-off the enterprise almost exclusively focused on one sector. Information about other lines of business and their requirements was largely unknown.

The identification of acceptable data about the market potential was decisive for the success of project. Only if the new product could reach a sufficiently large quantity, would the investment pay off. The requirements on the data accuracy was accordingly high, resulting in the need to systemize the assessment of the product potential.

Together with the customer Schuh & Company first developed a grid which classifies the components that need to be manufactured according to their use case. More than ten use cases were determined and then contrasted to business lines in which at least one of the use cases was found. The amount of parts to be manufactured per year was determined with the necessary components required for the production of the respective end products per line of business.

In a second step, the yearly demand for products per use case and business line was derived by looking at the yearly component volume including segment specific machine capacity, assembly structure, lot size, as well as investment cycles. With the help of these measures, the market volume could be accurately estimated.

In order to determine the market potentials exactly, the primary markets were analyzed in more detail to include technical aspects. From the data collection the division of the respective component quantities between the different market segments within the three main markets was known. For every region filter were developed which helped to establish the attainable annual market share in the respective market. Some examples of criteria applied are the degree of performance for important deciding factors, the quality of the market access, possible market entry barriers etc. In workshops the most important markets were assessed and with the help of a collective decision-making process the respective market potentials were compiled.

The identified market potentials made management's decision easier; the development of a new product is worthwhile and the practical experience of the project is a good investment into the company's future.

Change Originates from within the Team

The workshops involved employees of different departments such as purchasing, engineering, controlling, sales, management as well as us, the external consultants. This concept of working in inter-departmental teams was new to the employees of our client.

The information exchange had a completely new quality for the enterprise. Slowly, a team formed that embraced the project. To enable the employees to identify even further with task, the project received a name. Going forward the project was only referred to as "Max".

A preexisting insight was further supported by the discussion about the markets in the first phase: The most important decision criteria for the customer are the unit costs. Therefore, the product's fixed costs and annual operating costs needed to be kept in mind during the assessment of alternative solutions and the conception phase of the new product. In comparison to the current product, the production costs needed to be reduced by over 30% to be able to obtain the envi-

	Application				
Sector	1	2	3	4	...
A	5	-	13	43	...
B	-	-	26	31	...
C	-	14	-	-	...
D	22	54	47	16	...
E	11	-	-	56	...
...

Figure 2: Market Volumes per Sector and Application

saged margins in the future. Any enhancements to the current product would not accomplish the necessary cost reductions.

During the conception the team was also forced to find new solutions. To better detach themselves from the existing solution, the machine was at first deconstructed into pieces by functions. In workshops, alternative solutions were created for every corresponding function. If possible the new solutions were also evaluated for cost effectiveness.

The vigor that initially exists during such projects often vanishes after some period of time. This phenomenon seems to occur in particular if the routine work takes over and the value of abstract yet creative discussions for possible alternative solutions is not recognized by everyone. It requires an experienced facilitator and the backing of upper management to master this often difficult phase.

The courage not to give in to the daily routine is rewarded with creative solutions. After team "Max" adjusted to the new way of work, the employees started to break old taboos. Questions such as "Why does the company have to develop and manufacture all components itself?", "Which advantage does the customer have when using the expensive special jaw chuck instead of the standardized solution in their manufacturing process?", "Would the customer accept standardized automation if it is offered to him at half the price?", "Which cost advantages has the customer during the regular operation if we used a slightly more expensive alternative of a function?", are only some that were discussed in the team. However, their content gives a good insight into the depth of the

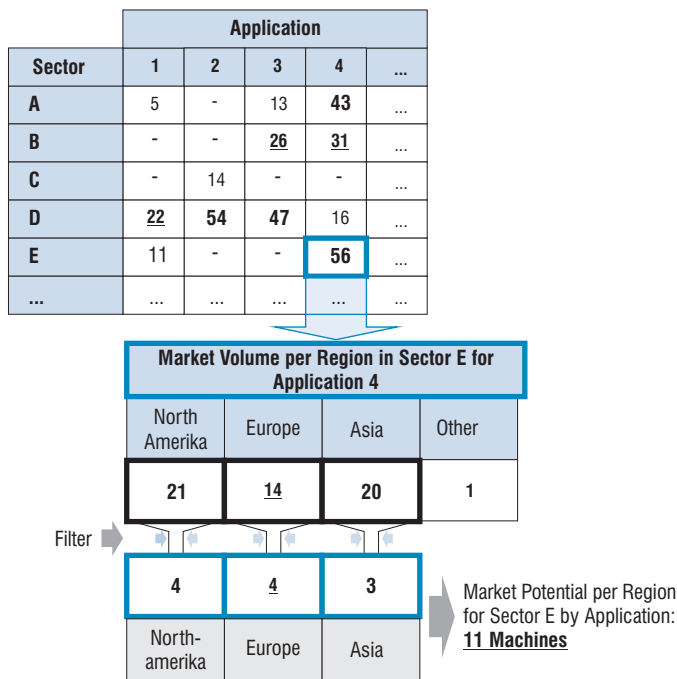


Figure 3: Example of a Systematic Deduction of Market Potential as a Base for Product Decisions

changes. No more sacred cows existed to block the way for team “Max”. Over the course of the next weeks the function kit was further completed. The costs of performance per function were determined. Thus, it was possible to determine component costs per functions during the conception phase. The relationship between market potential, unit costs per component, as well as extent and structure of the function kit was fully understood.

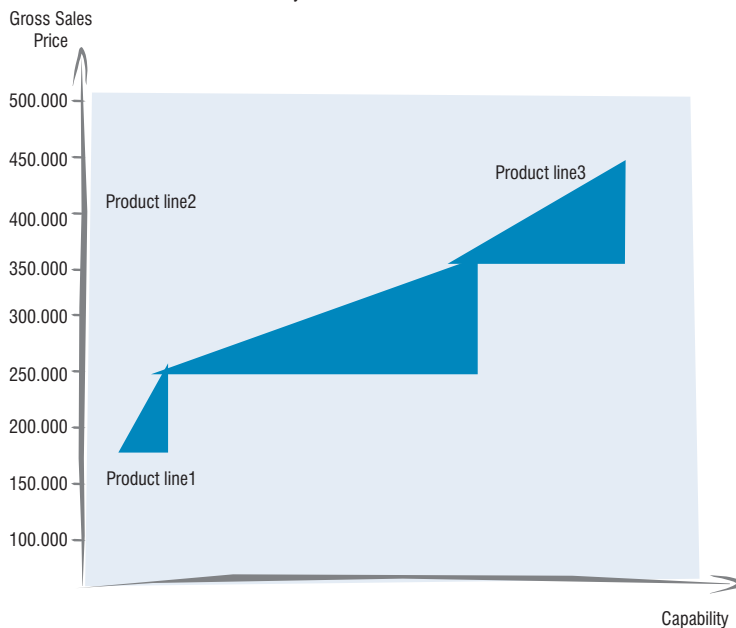


Figure 4: Structure of a Product Program Driven by Requirements

The Standardized Product Range of a New Enterprise

The new product concept with a modular architecture allows the enterprise to realize performance leaps of its products while at the same time realizing higher price margins in the market. If the buyer favors product line 1 in future, he receives a high-quality product with a narrow performance breadth at a low price. If, on the other hand, he chooses product line 2, he has the ability to configure the machine according to his performance requirements. Every additional function can be added with a profitable margin. Product line 3 can be compared to a Mercedes S-Class of the new product range. This product line uses current high end technologies and ventures into performance ranges which cannot be reached by the other product lines.

The use of communalities for the modular product range as well as the consideration of all requirements across the three product lines during the development of the modules, are reflected in the corresponding cost advantages. Even though the development efforts of the modular structure are higher than those of an integral architecture, the production costs decrease. This is achieved through reduced transaction efforts over the complete product life cycle as well as economies of scales for components of the single modules. The development department now has enough room again to come up with innovations. The other areas, in particular purchasing, manufacturing, assembly and sales, have the opportunity to standardize processes and design them more efficiently. In the mid-term even further cost reductions are possible. To unleash these potentials the enterprise, with its employees and the new self-image, holds the key in its own hands.

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