

# INNOVATION OF COMPANY'S PRODUCT PORTFOLIO IN THE FIELD OF CONSTRUCTION INDUSTRY IN SLOVAK CONDITIONS

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## **Abstract**

The paper deals with potential product portfolio innovation in the manufacturing enterprise. The constantly growing and changing market demands are forcing enterprises to respond to these changes flexibly and dynamically. If the company has a lack of ability to increase a degree of adaptability, it is necessary to proceed to radical solution that can help to restore competitiveness in the market. That solution in today's technologically demanding environment is called innovation. Product innovations have the highest potential. They represent a sequence of changes, intended to create a new product. The paper is divided into two parts. The first deals with the analysis of the current status and market position of a particular company in the field of construction industry. There was also the multifactor portfolio matrix used, which represents a sophisticated tool for the evaluation of the portfolio of the company in comparison with the well-known matrix Growth and Market share of Boston Consulting Group. The content of the second part includes a design of innovation of Cementáreň Lietavská Lúčka Inc. product portfolio, which operates in the construction industry. The design was created on the basis of demand and in cooperation with company management. The product portfolio innovation represents vertical diversification of its current portfolio with a calculation of estimated payback period. Capital investments are necessary for product portfolio diversification.

**Key words:** innovation, product portfolio, multifactor portfolio matrix, company

**JEL Code:** O31, L11, M11

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## **Introduction**

The relationships among marketing, innovation, and design have become increasingly important over the past decade. This upward trajectory has led to recognition of the link between innovation and design, and companies have found that they can develop a competitive advantage by fostering this link. Despite the advantages that these companies

may obtain, it is quite difficult to define the strategic actions that take place. Furthermore, the relationship between design and innovation is especially difficult to define because design encompasses a wide range of areas: architecture, fashion design, interior design, graphic design, industrial design, and engineering design. In addition, the concepts of design and innovation partially overlap (Walsh, 1996). Indeed, the basic term “design” is quite broad and has diverse meanings (Candi, 2007).

## **1 Product innovation**

The majority of product innovation research has focused on the specific functional aspects of a product that are not found in previous products. However, the importance of product design has increased in today’s competitive markets. Candi (2007) argued that the huge success of the iPod was not only a result of its superior technology but also a result of its advanced product design. Previous research has noted that design can lead to a distinct competitive advantage (Bloch, 1995) and that the absence of innovation is a primary reason for firm failure in competitive markets (Moon, 2004; Sethi, Smith, and Park, 2001). These findings indicate that successful firms must maintain a high level of innovation while providing cutting edge design; however, it is difficult to achieve such innovative design in a dynamic, changing environment. Managing innovation in a turbulent environment, where market uncertainty and complexity exist, is one of the biggest challenges that firms face in building and maintaining success (Buganza, Dell’Era, and Verganti, 2009).

Despite this general agreement on the importance of design and innovation, the precise role of design innovation in marketing has received little attention. Therefore, this paper seeks to define design innovation. The majority of papers that mention design and innovation fail to provide insight into the important link between design innovation and marketing competences. Thus, this paper also seeks to describe the key factors in the relationship between design innovation and marketing competences.

Developing and marketing radical or really new products are ongoing challenges vital for a firm’s continued profitability. The risks are considerable (Sorescu and Spanjol, 2008), since technologies used in really new product innovations are still evolving at the time of market entry. Technological risks and market uncertainties complicate both the firm’s decision of which technologies to utilize and the customer’s decision to adopt. Furthermore, identifying customer needs and translating them into product characteristics are very difficult, since customers are likely to be uncertain about the benefits of the product innovation

(Gourville, 2005). The customer benefits an innovative product is meant to fulfill are thus difficult for the firm to define and communicate (Rosa and Spanjol, 2005).

Product innovation consists of the following three aspects: new feature/function, new look/feel, or new technologies (Gautam and Singh, 2008). As technology changes, products are redesigned to incorporate the new technology (Gautam and Singh, 2008). This means that innovation through product design change and feature or functional change can create value. For example, it can lead to the development of technology these results in a competitive advantage. Technical design value is achieved through economic competence, efficiency, technical virtue, and excellence (Beverland, 2005). If design innovation is created through the development of product features and functions, design value can be created via efficiency and cost savings.

### **1.1 Types of product innovation**

The importance of product innovation is increasing, what is influenced by competitive pressure.

New product brings positive change compared to the previously used product, which may be for example the increase in value, increasing level of customer satisfaction or reduce costs.

There are three fundamental types of product innovation which depends on the degree of usefulness for customers:

- 1) Completely new products – products related with breakthrough technological invention that brings to customer a high level of usefulness;*
- 2) Modified products – products with qualitative change compared with previous products that represent significant value for customers;*
- 3) Analogous products - products with partial changes, changes in individual performance. These products have a moderate degree of usefulness for customer.*

(Jakubíková, 2008)

The article deals with product portfolio innovation in a particular company of construction industry in Slovakia. The company has more than 100 years of history during which its product portfolio consisted of various types of cement.

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## 2 Methods

In the paper is used the methods of formal logic, especially synthesis, comparison, induction and deduction.

In the analytical part of the paper we used the following tools and methods:

- environmental analysis,
- analysis of potential competition,
- SWOT analysis,
- the Growth-Share Matrix.

The growth-share matrix, which was developed by the Boston Consulting Group over thirty years ago. We may recognize this resource allocation tool and its categorizations of SBUs as stars, cash cows, dogs and question marks. This tool is probably best used to illustrate the construction of business portfolios to create a company that will evolve and remain profitable over time. Application of the matrix requires the user to identify those businesses-or products, if used at the level of the business marketing manager – that generate resources for the parent organization (cas cows); those that need resources from the parent organization to keep pace with a fast-growing market and provide substantial returns in the future (stars); and those that may never be significant contributors to the corporation in the future (dogs and question marks). (Vitale, Giglierano, Pfoertsch, 2011)

But for our needs we use multifactor portfolio matrix. It is more sophisticated tool. The GE market attractiveness – business strength matrix assumes that, at lower levels of abstraction, no new competencies will be build and gives preference to those businesses or products in which the company already has competencies in place.

This tool also does not directly consider synergies between businesses or products. Unlike the growth-share matrix, though, future business strength can be defined in such a way to give a higher score to a business or product that makes better use of available resources. Thus this tool offers more sophistication than the growth-share matrix.

**Fig. 1: The growth-share matrix**

		<b>Market attractiveness</b>			
		High	Medium	Low	
Invest/Grow	Harvest/Divest	Selectively Earn			
			Strong	Medium	Weak
			<b>Business strength</b>		
			Protect position	Invest to build	Build selectively
			Build selectively	Build selectively or manage for earnings	Limited expansion or harvest
			Protect and refocus	Manage for earnings	Divest

Source: VITALE, R., GIGLIERANO, J., PFOERTCH, W. *Business-to-Business Marketing. Analysis and practice*. PearsonEducation. 2011. p. 116

### 3 Characteristic of company and its environment

The product portfolio of company remained constant in the past. Product portfolio consisted of various types of cement. The product portfolio of company was modified according to the new owners who have different views on composition of the product portfolio of the company. Recent changes in the composition of shareholders in 2010 which led to the complete cessation of production of cement. These changes influenced the company position the market and its economic performance.

Resulting from this fact, we decided to undertake to product portfolio innovation. Innovation preceded environmental analysis, SWOT analysis and Growth-Share Matrix.

The company has been in the segment of construction industry. The product portfolio consists of product lines:

- *ground limestone and dolomites,*
- *clay,*
- *provision of laboratory test.*

The most important competitors of company are Dolvap, s. r. o. Varín, Kotouč Štramberk, s. r. o., Carmeuse Slovakia, s. r. o., Dolkam Šuja, a. s. which focus on the production of ground limestone and dolomites. The company suppliers do not have bargaining position. On the other hand the company has a customer with bargaining position – Slovenské elektrárne, Inc. The revenues from this customer are involved to 80 % of total sales of the company. The company's assets are not currently encumbered by any credits.

The company is characterized by the strong economic impact. In the time of financial and economic crisis when the construction industry is stagnating, management must find new ways to increase sales and revenues. The company is little influenced by technological impact.

### 3.1 SWOT analysis

To determine the current position and situation on the market, we decided to perform SWOT analysis.

**Tab. 1: Element of SWOT analysis**

Strengths	Weaknesses	Opportunities	Threats
Quality of management	Education of management	Manufacture and sale of micro products	Changes in legislation
Qualification of employees	Labour productivity	Processing of dolomite	Low attractiveness manual occupations
Quality system	Quality of raw materials	Desulphurization heating plant	Rising input prices
Storage capacity of products	Extraction and transportation of raw materials	Construction of highways	Changes in the surface of construction of highways
Logistics	Technology	Car industry - plastics	Reduction of cement and limestones production
Geography position	Functional strategy	Agriculture and forestry	Changes in the transport of products
	Marketing		
	Under-capitalization		

Source: Self processed

We determine weight and performance (probability of occurrence) for individual strengths, weaknesses, opportunities and threats. The most important strengths are *storage capacity of products, geography position, and logistics*. The most serious weak spots are *poorly built functional strategies, poor orientation to marketing and under-capitalization*. For further development of the company is essential to focus on improving management education which should not be weakness but the strength.

This analysis clearly shows that the company should be tried to obtain contracts to supply products for desulfurization of electric power and supply of raw materials in the construction of highways.

The most serious threats which also show a high probability of occurrence are *rising input price and reduction of cement and limestones production* which negatively affected the development of revenues.

The result of SWOT analysis is a defensive strategy of the company which it realizes on the market now. Strengths are on the higher level than weaknesses. On the other hand,

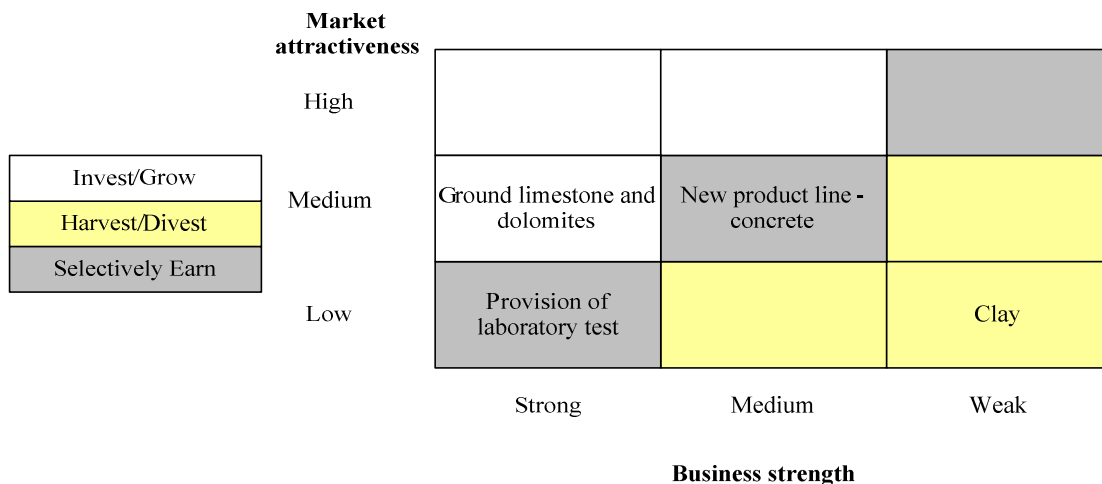
threats predominate over the opportunities. The company should mobilize all its strengths to counter potential threats and outperform the opportunities.

### 3.2 The Growth-Share matrix

We created growth-share matrix from individual product lines, based on the analysis of their success on the market and attractiveness to customers. On the basis of the results we further recommend which product line the enterprise should develop and on the other hand, those not attractive for customers and also for the company.

In its preparation we used internal company information about the quantity of ordered and sold products from different product lines. The matrix also contains new product line - cement. The attractiveness of new product lines for customers was investigated by the short questionnaire survey, which was submitted to fifty developers and construction companies, of which 84 per cent expressed interest in a new product.

**Fig. 2: The Growth-Share Matrix of company product portfolio**



Source: Self processed

## 4 The proposal of product portfolio innovation

Based on performed situational analysis of company we tried to get ideas - possible invention that could be the basis for innovation in the first phase of product innovation. In the analysis of the opportunities we identified the potential invention in the form of obtaining contracts for the production and sale of raw materials for desulfurization of fluidized boilers in CHP plants. Partially, the company is currently interested in this production, is the supplier of district heating companies. The second innovation is to focus on the supply of raw materials needed for housing and highway construction. The company currently supplies companies active in

this area with aggregates. We see potential opportunity in the portfolio enlargement of production and sale of concrete. Production orientation on concrete would mean innovation of product portfolio of company, which would mean increased sales and profitability of the company, if successful.

The second step in the innovation of product policy is the selection of variants. As the company is already interested in selling raw materials for desulfurization of fluidized boilers, it may try to expand customer portfolio. But this possibility cannot be considered for potential subject for innovation. Therefore, after consideration of all the strengths, weaknesses, opportunities and potential threats the innovative expansion of the product portfolio of production and sale of concrete was chosen as a subject of innovation interest. Great advantage for the company is the raw material base, which has the form of aggregates, which is currently being sold. We start with the fact that the company is part of a multinational holding together with other cement works and limes in Slovakia. This fact favours the purchase of other basic raw material - cement. Based on internal information of the company, inter-company cooperation can cement be bought from their partners for less than the selling price. Innovation in this direction does not require a large staff.

For innovation in this direction is necessary to purchase machinery. Since the company is currently engaged in a relative direction of business, the new facility will be combined with existing equipment. In this way, the company will save part of the fixed costs of machinery unit purchasing. After carrying out a market research in the field of technical equipment necessary for the production of concrete, we decided for the machinery from Schwing Stetter, Ltd., Type HN 4.0.

In the next step, we quantified the costs in the business analysis according to the calculation formula and the anticipated return on investment. We based on the information about the average use of machinery by closest competitors and the price per m<sup>3</sup> of concrete. Price is calculated on the basis of fixed and variable costs, plus a sales margin.

**Tab. 2 Price calculation of new product**

<i>Items</i>	<i>Amount (€)</i>
<b><i>Direct material</i></b>	<b><i>46,21</i></b>
Stone	8,96
Cement	37,25
<b><i>Direct wages</i></b>	<b><i>0,24</i></b>
<b><i>Other direct costs</i></b>	<b><i>2,45</i></b>
<b><i>Cost of operation</i></b>	<b><i>1,91</i></b>
Re-deduction	1,18
Corrections and maintainance	0,66
Loan interest	0,07
<b><i>Own cost of production</i></b>	<b><i>50,80</i></b>



Administrative expenses	1,03
<b>Own cost of performance</b>	<b>51,83</b>
Commercial expenses	0,71
<b>Total own cost of performance</b>	<b>52,54</b>
Margin	13,64
<b>Selling price</b>	<b>66,18</b>

Source: Self processed

Anticipated return on investment was determined by static methods for assessing the effectiveness of investments - payback period.

$$\text{Payback period} = \frac{I_0}{\phi \text{ anual CF}} \quad (1)$$

In one-third use and sales the estimated payback period is 9.5 years. In the calculation we assumed that the manufacturing facility is fully used, and also will not be in operation throughout the year.

If we build on the competitive advantage that the company can achieve in terms of prices due to lower costs of concrete production, the company will have great potential for success of this innovation.

**Tab. 3 Price comparison of concrete with competitors**

<i>Companies</i>	<i>Price for 1 m3 in €</i>	<i>Production capacity v m3/h</i>
RBR, s. r. o.	81,70	120,00
TBG Doprastav, a. s.	73,00	85,00
ZAPA betón, a. s.	85,00	120,00
<b>Company</b>	<b>66,18</b>	<b>150,00</b>

Source: Self processed

## Conclusion

In the current turbulent changing business environment is extremely difficult to get and maintain customers, stabilization and increasing market share and maintain a certain level of competitiveness. An important tool of adapting of product portfolio to changing business needs and market requirement is an innovation. Despite the complexity and risks the success of innovation is potential for long-term existence of company.

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