

## **Application of Lean Strategy in the new product development process in the furniture industry**

MAGDALENA OLKOWICZ, WACŁAW SZYMANOWSKI

Department of Technology, Organisation and Management in Wood Industry; Warsaw University of Life Sciences;

**Abstract:** *Application of Lean Strategy in the new product development process in the furniture industry* The aim of this paper is to draw attention to the possibility of more efficient utilization potential of the Polish furniture industry. There is incontrovertible evidence that an efficient and effective process of a new product development is the key to the survival of any manufacturing company in today's globalized economy. However the success of the development process ensures a finding and definition of strategies which will be appropriate for the company. Particular attention should be paid to the lean strategy, which assumption is to reduce waste, and what favors: a reduction of process time, savings and faster the new product implementation on the market.

*Keywords:* new product development, lean product development, new product development strategy, furniture industry,

### INTRODUCTION

The furniture market is open to international competition, which favors increasing the company's turnover, but also requires from manufactures to become more involved in the maintenance (or improvement) a market position which has been attained [6]. There is an incontrovertible evidence that an efficient and effective process of a new product development is the key to the survival of any manufacturing company in today's globalized economy. Properly conducted and managed a product development process has effects in shortening its duration, and faster product launch on the market [8]. The new product development is defined in a present article as: „series of activities aimed at shaping the product in a way that allows the producer to offer it to consumers” [10].

Commercial success or failure of the product does not depend strictly on the product itself (in the literal sense - as an object). Adapted strategy for the product implementation on the market also determines the success or failure of the product, and the key to success in conducting effective product development process is to find and define appropriate strategies for your company [3]. Therefore, before defining the market strategy and new product strategy, it is necessary to evaluate their own resources (e.g. infrastructure, human resources, distribution networks, range of products), what was noted by Szymanowski and Perkowski [11]. This activity will significantly have an influence on the shape of the company, and that is why it is necessary to consider whether the company resources are sufficient to achieve the assumed objective, for instance whether the current state of staff is optimal, whether there is a need to employ new workers or to cooperate with specialists from outside the company.

Furniture manufacturers most frequently are choosing one of the three strategy mentioned in this place: a cost reduction strategy, a strategy for improving and more advanced manufacturing technology that would enable to achieve a position on higher class furniture market [6] and imitation of products which have been already implemented by competitors [2]. The research of Rutkowski [9] also shows that manufacturers of furniture and wood products in Poland, most often act according to an improvement strategy. In the next sequence popular is the use of the strategy: substituting old products by new (old products have been improved) and an innovative product strategy. Less frequently are used strategies: upholding,

extension of line and modifying of the product. Occasionally you can also meet with the strategy of a new product application, but there was no strategy to pursue remerchandising (a strategy of market penetration) in the furniture industry.

## REVIEW OF THE NEW PRODUCTS STRATEGIES

It should be noted that in the literature there is no consensus as to the nomenclature and definition of strategies associated with the development and implementation of new products. Some authors, e.g. Cooper and Edgett [4], isolate from the product strategy, additionally the strategy of launching product on the market, while others use the name „product strategy” interchangeably with the term: „market implementation strategy”, for example, Chiu et al. [3]. In the literature we can also encounter the term: „innovation strategy” [1] describing the development process strategy and (or) strategy of innovative products implementing on the market.

Table no 1 contains ten strategies of innovation, which according to Bowonder et al. [1] are today the most effective and most commonly used by large companies (corporations), which were the subject of study (among them were such as IKEA).

**Table 1.** Selected strategies for creating new products [1]

No	Innovation Strategy	Description
1.	<i>Platform Offering</i>	Application similar or the same technology for the group of products addressed on different market segments or even on different markets;
2.	<i>Co - Creation</i>	Cooperation with customers and use their observations to provide a new perception of the product;
3.	<i>Cycle Time Reduction</i>	Delivery a product to the customer in a faster way because of reducing a cycle time to launch it on the market;
4.	<i>Brand Value Enhancement</i>	Redefine the limits of the brand (or improve the image and perception of the brand) to deliver new products in order to meet the aspirations of customers;
5.	<i>Technology Leveraging</i>	Use technology to gain competitive advantage;
6.	<i>Future - Proofing</i>	Protecting against technology ageing of the product through the development of various technological options for a new product in order not to lag behind the competition;
7.	<i>Lean Development</i>	The strategy encompasses three distinct areas: the market price of the product, reduce wastes /costs of product development and production and reduce time to market;
8.	<i>Partnering</i>	The use of a cooperation form like a partnership in order to share common resources and risks;
9.	<i>Market Segmentation</i>	Creating new market segments, which opens up new opportunities for the company;
10.	<i>Acquisition</i>	Acquisition: technologies, brands or markets;

„Lean Product Development Strategy” is especially worth discussion. Thinking „lean” is today one of the approaches to the management, which has been widely accepted and adapted by various industries and services, such as automotive, aerospace and pharmaceutical [5,8]. Furthermore, Lean Product Development from the other strategies distinguishes fact that it responds to three different needs of today's entrepreneurs: has a positive effect on the product market price and the costs of development and manufacturing, and shortens development time from concept to implementation of the new product on the market [1].

It was also found, that the implementation of the principles and practices of lean thinking in enterprises from the wood sector had effects on greater effectiveness and efficiency of operational activities in plants. The customer service and the new product development were also improved, and the growth of customers' satisfaction was observed [5].

## LEAN PRODUCT DEVELOPMENT STRATEGY

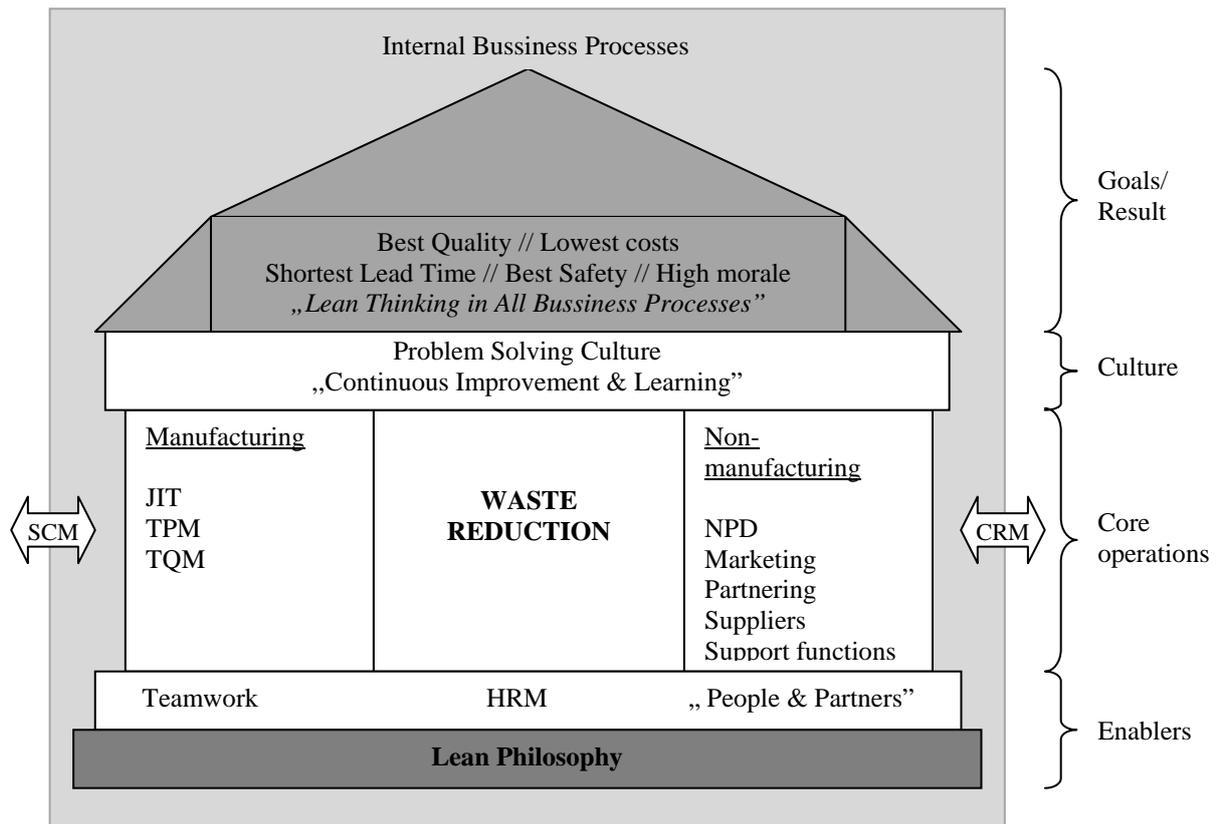
There is no single definition of the theory of lean. Lean thinking can be broadly defined as a multidimensional approach to execute the tasks with emphasis on reducing losses. Literature describes the seven main types of wastes: errors; fix (repair) errors; production of goods for which there is no demand; unnecessary stages (set of activities) in a production process; unnecessary a collocation of employees; unnecessary movement of resources (financial, material); the downtime (also plant shutdown) [5].

In particular: reduction of excessive volatility of the process, creating better flow of information about customer requirements and the elimination of wastes – they are the main elements of the strategy of lean in a product development. In contrast to the application of the theory of lean in the manufacturing, product development is often: unrepeatable, non sequential, with undefined tasks to perform and unclear flow of information. The process of new product development it is also a sensitive area of the business in which taking, or not taking the risk, may decide the success or failure of the entire project. From the differences resulting from the properties of both processes, variability in product development is higher than in the manufacturing process. Similarly, because of low costs and a long duration cycle, a relatively profitable sense of the wasted time, allowing earlier growth of profits from new products and compared with the lost expenses, may be much greater in the product development process than in the production [8].

Although the principles of lean have their origin in the manufacturing, their application in the product development environment may bring even better results, because of greater process variability than the sphere of production.

## EXAMPLE OF AN APPROACH TO THE LEAN STRATEGY

In the literature, you can meet with different approaches to strategy of „Lean Product Development”. Concept shown below (Fig. 1) was formulated for furniture and wood products manufacturers. It is also an example of a comprehensive approach to the lean in all areas of business, including the development of a new product.



**Fig. 1** Conceptual framework of lean thinking for wood sector [5]

The Czabke et al. [5] concept is based on the philosophy of lean, which should affect the entire operating style, and must necessarily be adopted by the bosses (Fig. 1 - the foundation of the house). The second layer of the lean house is a human resource management (HRM). Lying within this department competence should be to spread the idea of partnership and cooperation between employees of the plant. On the foundation of the lean house, two columns are constructed. One column relates to the production processes, in conjunction with the recommendations of methods to identify and eliminate losses (Just in Time - JIT, Total Productive Maintenance - TPM, and Total Quality Management - TQM). While the second column contains processes such as: the new product development and business departments, which are not directly related to production (e.g. marketing, collaboration with suppliers, customers) but which also require the identification of sites that generate losses. In addition, production is related to supply chain management (SCM), and non-manufacturing areas of the company are associated with customer relationship management (CRM).

The ceiling of lean house creates a lean culture, which supports the roof (by supporting of reaching objectives and additional linking the columns together). The roof, that crowns the house, encompasses the goals and results of lean thinking within enterprise.

Guarantee of success after implementing lean principles and practices can give taking them into account simultaneously in all areas of business. Referring to Figure 1 - all elements of lean house's construction must be implemented. Culture of continuous learning and improvements creates then new opportunities for further improvements [5].

## SUMMARY

Selection of a new product strategy is another important decision which must take the manufacturer planning to develop a new product. Implementation of the product strategy in enterprises is, however, necessary to separate the permanent success from failure. Furthermore, the competitiveness and even company survival on the market depends on the adopted product strategy and skilful controlling it through: development, application and management [7]. It is necessary to weight faults and advantages of considered options of strategies, and afterwards consciously make a choice of the plan of strategic proceedings. Consequence in action is the most determinant factor of market success or failure of new product.

## REFERENCES

1. BOWONDER B., DAMBAL A., KUMAR S., SHIRODKAR A., 2010: Innovation strategies for creating competitive advantage; Research Technology Management (May – June 2010), Industrial Research Institute, Inc.;
2. BUMGARDNER M., BUSH R., WEST C., 2000: Beyond yield improvement: selected marketing aspects of character - marked furniture; Forest Products Journal, Vol. 50, No 9, 51 – 58;
3. CHIU Y.-CH., CHEN B., SHYU J.Z., TZENG G.-H., 2006: An evaluation model of new product launch strategy; Technovation, No 26, 1244 – 1252;
4. COOPER R., EDGETT S., 2005: Lean, Rapid, and Profitable New Product Development; Product Development Institute, Canada;
5. CZABKE J., HANSEN E.N., DOOLEN T.L., 2008: A multisite field study of lean thinking in U.S. and German secondary wood products manufacturers; Forest Products Journal, Vol. 58, No 9, 77 – 85;
6. MAMICA Ł., 2004: Przemysł meblarski Kalwarii Zebrzydowskiej – klaster przemysłowy?; Zeszyty Naukowe Akademii Ekonomicznej w Krakowie nr 667; Kraków, 137-150;
7. McGRATH M.E.; 2004: Next Generation product development: how to increase productivity, cut costs and reduce cycle Times; The Mac-Graw Hill Companies, Inc.; New York;
8. NEPAL B., YADAV O.P., SOLANKI R., 2011: Improving the NPD Process by Applying Lean Principles: A Case Study; Engineering Management Journal, Vol. 23, No 1, 58 – 67;
9. RUTKOWSKI I., 2006: Metodyczne i kompetencyjne uwarunkowania rozwoju nowego produktu w przedsiębiorstwach przemysłowych, Seria: Prace habilitacyjne; Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań;
10. SOSNOWSKA A. RED. 2003: Zarządzanie nowym produktem; SGH – Oficyna Wydawnicza, Warszawa;
11. SZYMANOWSKI W., PERKOWSKI R., 2003: The building and implementing of an Internet based marketing strategy; Ann. of Warsaw Agricultural University, Forestry and Wood Technology Special Number II, Warszawa, 146 - 153;

**Streszczenie:** *Zastosowanie strategii uszczuplania w procesie rozwoju nowego produktu w przemyśle meblarskim* Celem niniejszej publikacji jest zwrócenie uwagi na możliwość efektywniejszego wykorzystania potencjału polskiego meblarstwa. Istnieją niezaprzeczalne dowody na to, że wydajny i efektywny proces rozwoju nowego produktu jest kluczem do przetrwania każdego przedsiębiorstwa produkcyjnego w dzisiejszej zglobalizowanej gospodarce. Natomiast sukces procesu rozwojowego w znacznym gwarantuje znalezienie i zdefiniowanie właściwych dla danego przedsiębiorstwa strategii. Szczególną uwagę należy zwrócić na strategię uszczuplania, której założeniem jest redukcja strat, co sprzyja: skróceniu czasu procesu, oszczędnościom oraz szybszemu wdrożeniu produktu na rynek.

Corresponding authors:

mgr inż. Magdalena Olkowicz  
prof. dr hab. Waław Szymanowski  
Warsaw University of Life Sciences  
Department of Technology, Organisation and Management in Wood Industry  
ul. Nowoursynowska 159, 02-776 Warszawa, Poland  
e-mail: magdalena\_olkowicz@sggw.pl  
e-mail: waław\_szymanowski@sggw.pl