



## APPLICATION OF THE BENCHMARKING METHOD IN THE PROCESS OF NEW TEXTILE PRODUCT DEVELOPMENT: A LITERATURE REVIEW

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**Abstract:** *Benchmarking represents a contemporary method which provides opportunity for learning and change of behaviour based on comparison with the ones best in class. It creates a base for many developmental opportunities for the organizations which are capable to recognize benefits from practical implementation of this method. Benchmarking has an important place in the development of new product, as well as services, of which a large proportion of small and medium-sized enterprises (SMEs) are still unaware. In initial phase of new product development, in the phase of idea generation, results of benchmarking analysis may affect the projection of success path of following phases of product development. Considering the process of development and marketing of new textile products raises the question of best practice of the process itself, as well as the role and place of benchmarking within the stages of the process of development of new textile products. The paper focuses on looking at modern product innovations marketed by organizations operating within the textile industry and drawing conclusions about the level at which the development of operational performance and the innovation incentive of organizations depends on the implementation of the benchmarking process in the process of developing new textile products.*

**Key words:** *benchmarking process, new product development process, textile industry, innovations*

### 1. INTRODUCTION

Benchmarking appears to be the most popular managerial tools around the world, thus it become primary instrument in total quality management (TQM), knowledge management and process improvement efforts of the companies. Better marketing possibilities could be recognized by the implementation of this tool, as well [1]. Through the organizational perspective, benchmarking is viewed as external focus on internal activities, functions or operations with the aim to reach continuous improvements [2]. Benchmarking is used within many organizations as a mean for gathering of valuable knowledge about certain business activities, products, processes etc. Therefore, it can be said that it is widely accepted initiative for improvement of business [3]. Although there is an opinion in the practice that organizational benchmarking seeks to imitate or copy the activities and/or products of its competitors it actually represents the process in which organizations overlook outside its borders for the purpose of learning. Innovation stimulation manifests itself as a learning outcome in this process [4]. Organizations face an ongoing effort to improve competitiveness in a changing business environment that carries a high degree of uncertainty and risk, so new challenges



that organizations face require organization problems to be addressed in a new way [5]. In the literature about benchmarking can be found that organizations strive to be the best, in the sense of „best-in-class“, leading brand in the market and everything else that makes them stand out as unique in the eyes of customers, and differs them in comparison to competitors [6]. Implementation of best practice encourages the wave of continuous improvements within the organization [7]. Practice of new product development can be defined as common performance that implements ideas and policies that lead to the launch of new products and services. Best practice would, then, be the one which results with best business outcomes, so taking into account the new product development practice the best practice would be the one that promotes greater success in development and launch of new products and services [8].

Process of new product development within textile industry receives new dimension in contemporary business circumstances, where innovation is recognized as a vital source of competitive advantages of organizations [9], whereby organizations' struggle for competitive advantage is strengthened and benchmarking is a continuous activity [10] of comparison with best in class receives special role in this process. Therefore, the main considerations in the paper are to look at contemporary product innovations marketed by organizations operating within the textile industry and to draw conclusions about the level in which the development of operational performance and innovation incentive for organizations depends on the implementation of benchmarking processes in the process of developing new textile products through identification the place and role of benchmarking within the various stages of the new product development process.

## **2. PROCESS OF NEW TEXTILE AND CLOTHING PRODUCT DEVELOPMENT**

Market globalization created an arena of competitiveness in which the organizations are forced to continuously develop new successful products in order to survive [11]. The term „new product development“, refers to the process of development of individual products and overall new production program of one organization. The success of new product development is dependent of the understanding of customers' needs and desires which are being reviewed very early in the new product development process [12]. According to that, new product development shows its strategic characteristic [13]. The development of a new product is actually a process consisting of a number of successive stages, and this series of stages can also be considered as a series of activities aimed at collecting and evaluating information [14]. Shih et al. [15] point out that what makes the development of textile and apparel products so different from the development of other products is that this process involves a constant seasonal change in demand, production opportunities, technical application of materials. The development of textile and apparel products may vary because its characteristics are significantly influenced by seasonal plans and technical knowledge. These are driven by the trends that prevail over a short period of time. Incorporating a large amount of different ideas and knowledge into the process of developing a new product should have an impact to it, and result with enhancement of the process. The enhancement should be visible in adequate meeting the needs and desires of consumers. Within the research conducted by these authors, the focus is on the most important participants in the open innovation process, namely on customers and consumers. Consumers opinion is valuable. That is why various improvements can be generated by involvement of customers in the process of new product development. These improvements can be in product quality, risk reduction and increase of market acceptance of textile product [16]. In development of the procedure for the development of a new product or process within the SMEs, Šenk et al [17] list five successive and overlapping stages. Kowang & Rasli [18] state a standard flow of the new product development process, which contains five stages in their research about new

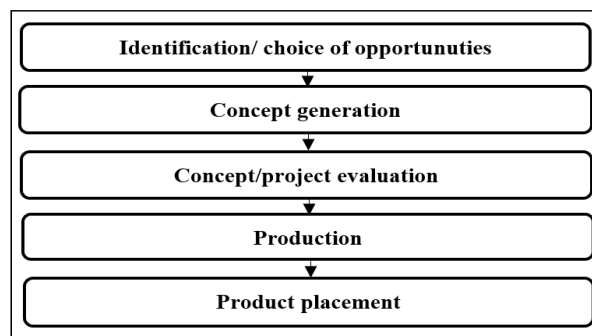
product development in multi-location R&D organizations. Durmuşoğlu & Barczak [19] explore the use of information technology tools in the stages of new product development, outlining three stages of this process. Nepal et al [20] state “stage-gate”, Noting that this process was first developed and implemented in the US industry in the late 1980s and early 1990s, and consists of discrete phases from planning to product placement, with key decision points at the end of each phase determining direction for further product development. Ebarefimia [21] states seven phases of new product development process. The phases presented by different authors mentioned in text are listed in table 1.

**Table 1:** Overview of the stages of the product development process based on research of different authors

Authors	Product development process phases
Šenk et al (2010)	Idea generation → evaluation and selection of the best idea → development of the product construction concept → testing of entrepreneurial idea → technical implementation and commercialization of product
Kowang & Rasli (2011)	Identification of chances → concept development → product design → process design → product commercialization
Nepal et al (2011)	Identifying needs → gate 1 → design specification → gate 2 → concept development → gate 3 → detail design → gate 4 → testing and improvements → gate 5 → production → gate 6 → marketing
Durmuşoğlu & Barczak (2011)	Discovery → development → commercialization
Ebarefimia (2014)	Idea generation → screening of ideas → concept development and testing → development of marketing strategy → business analysis → test marketing → commercialization

Source: [17,18,19,20,21]

Figure 1 illustrates an example of the process of developing new textile and clothing products.



**Fig. 1:** Example of new textile and clothing products development [15]

### **3. BENCHMARKING IN DIFFERENT PHASES OF PRODUCT DEVELOPMENT**

Successful companies use right methods at the right time. Great number of methods, such as method for support in decision making like AHP (Analytic Hierarchy Process), risk analysis, simulation and optimization methods, can be applied within the new product development process [22]. Benchmarking appears to be one of the methods that can contribute in new product development process. It is an approach that can be used to facilitate the implementation of improvements in new product development phases [23]. Within the research [24] the

implementation of specific types of methods by specifically successful companies has been investigated. Benchmarking is, thus, listed among cross-functional methods. In this group of method are listed the SWOT analysis, techniques of creative thinking and scenario planning as well.

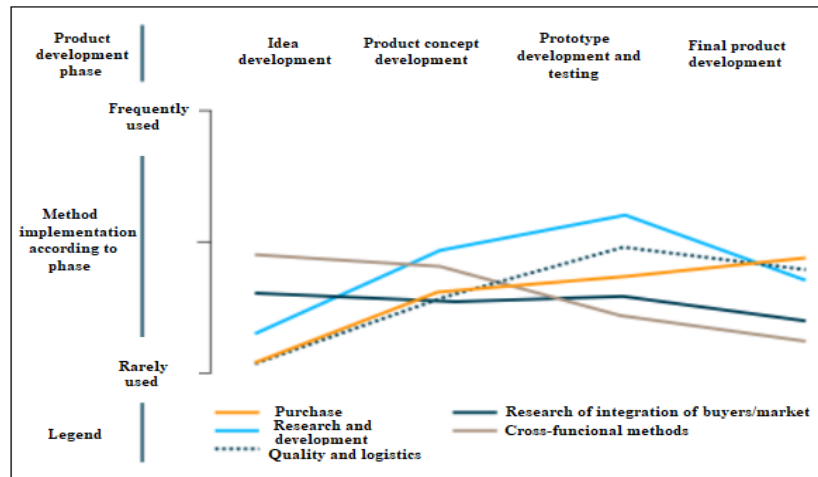


Fig. 2: Methods used in different product development phases [29]

From conducted research it is concluded that the implementation of the correct combination of methods is the key of success of product, and that companies that combine methods have 15% more success with their new products in comparison to ones that use single method practice [24]. As process of new product or service generation starts with idea generation and concept development every idea generation should be started with the respect to the customers demands and needs. Within this phase benchmarking process lets us understand the potential opportunities on the market in order to conclude what is necessary to do to take advantage of recognized opportunities. Based on the research represented in the figure 2, we can say that the implementation of the benchmarking as one of cross-functional methods is highlighted in initial phase of new product development process. It is still implemented in the phase of concept development, but its frequency slightly reduces with advancement through the following phases. Benchmarking implementation in these phases results in identification of necessary improvements in products, based on product performance gaps [25, 26]. Testing the reliability, completeness, flexibility, contemporary design of competing products and collecting other relevant information related to the placement and sale of products, significant information can be obtained that can assist the manufacturer in the initial stages [27]. Powell & Cassill [28] note that benchmarking of competitive products may form a base for development of new textile products, but also to contribute by forming appropriate strategies concerning features of new products and new market entry strategies. New idea generation that results from the application of benchmarking, especially contributes to the initial stages of development of a new textile product [29].

#### 4. CONCLUSIONS

New product development appears with the desire of the organization to achieve the success on the market, according to which it requires creativity, design, research and development, implementation of marketing strategies and investments in order to gain benefits. Without new product development organizations wouldn't be able to maintain their products suitable for the



market, neither would they be able to adopt new ways of production and placement of new products. Considering the contemporary innovations within the textile industry and the width of application of these products, it can be concluded that different world organizations in the field of textile products are encouraged to innovate and work to develop operational performance. Benchmarking is found to be a beneficial tool especially in initial phase of new product development. Idea generation that results from benchmarking application establishes a solid base for following new product development phases. Further research in this area should focus on examining the extent to which the benchmarking method is applied at the various stages of new product development in local small and medium-sized textile enterprises, as well as the level at which domestic textile companies are making efforts to develop operational performance through the application of management methods. On the basis of these data, it would then be possible to draw a parallel between the results obtained at the level of local enterprises and the results of foreign research.

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### REFERENCES

- [1] A. Lahat, A., A. Shoham, „*Benchmark the Marketing and Operation Capabilities for International Firms Export Performance*“, *Procedia-Social and Behavioral Sciences*, vol. 109, pp. 998- 1000, 2014.
- [2] J. Moriarty, C. Smallman, „*En route to theory of benchmarking*“, *Benchmarking: An International Journal*, vol. 16, no. 4, pp. 484-503, 2009.
- [3] M. Zairi, „*Benchmarking for Best Practice*“, Routledge, 2010.
- [4] R. Huggins, „*Regional competitive intelligence: Benchmarking and policy-making*“, *Regional Studies*, vol. 44, no 5, pp. 639-658, 2010.
- [5] B. Wellstein, A. Kieser, „*Trading-best practices - a good practice?*“, *Industrial and Corporate Change*, vol. 20, no 3, pp. 683-719, 2011.
- [6] G. Francis, J. Holloway, „*What have we learned? Themes from the literature on best-practice benchmarking*“. *International Journal of Management Reviews*, vol. 9, no 3, pp. 171-189, 2007.
- [7] M. Paunović, G. Čolović, S. Borić, „*Benčmarking proizvodnog procesa*“, *Tekstilna industrija*“, vol. 64, no 4, pp. 52-55, 2016.
- [8] K. B. Kahn, G. Barczak, J. Nicholas, A. Ledwith, H. Perks, „*An examination of new product development best practice*“. *Journal of Product Innovation Management*, vol. 29, no 2, pp. 180-192, 2012.
- [9] S. Salomo, J. Weise, H. G. Gemünden, „*NPD planning activities and innovation performance: the mediating role of process management and the moderating effect of product innovativeness*“. *Journal of Product Innovation Management*, vol. 24, no 4, pp. 285-302, 2007.
- [10] M. Hinton, G. Francis, J. Holloway, „*Best practice benchmarking in the UK*“. *Benchmarking: An International Journal*, vol.7, no 1, pp. 52-61, 2000.
- [11] A. Balbontin, B. B. Yazdani, R. Cooper, W. E. Souder, „*New product development practices in American and British firms*“. *Technovation*, vol. 20, no 5, pp. 257-274, 2000.
- [12] G. Gresham, J. Hafer, E. Markowski, „*Inter-functional market orientation between marketing departments and technical departments in the management of the new product development process*“. *Journal of Behavioral and Applied Management*, vol.8, no 1, pp. 43, 2006.





- [13] B. Nadia, G. Gregory, T. Vince, „*Engineering change request management in a new product development process*“. European Journal of Innovation Management, vol. 9, no 1, pp. 5-19, 2006.
- [14] W. Y. C. Shih, K. Agrafiotis, P. Sinha, „*New product development by a textile and apparel manufacturer: a case study from Taiwan*“. The Journal of The Textile Institute, vol. 105, no 9, pp. 905-919, 2014.
- [15] N. Bhuiyan, „*A framework for successful new product development*“. Journal of Industrial Engineering and Management, vol. 4, no 4, pp. 746-770, 2011.
- [16] F. T. Piller, D. Walcher, „*Toolkits for idea competitions: a novel method to integrate users in new product development*“. R&d Management, vol. 36, no 3, 307-318, 2006.
- [17] M. Šenk, P. Metlikovič, M. Maletič, B. Gomišček, „*Development of new product/process development procedure for SMEs*“. Organizacija, vol. 43, no 2, pp. 76-86, 2010.
- [18] T. O. Kowang, A. Rasli, „*New product development in multi-location R&D organization: a concurrent engineering approach*“. African Journal of Business Management, vol. 5, no 6, pp. 2264, 2011.
- [19] S. S. Durmuşoğlu, G. Barczak, „*The use of information technology tools in new product development phases: Analysis of effects on new product innovativeness, quality, and market performance*“. Industrial Marketing Management, vol. 40, no 2, pp. 321-330, 2011.
- [20] B .P. Nepal, O. P. Yadav, R. Solanki, „*Improving the NPD process by applying lean principles: A case study*“. Engineering Management Journal, vol. 23, no 1, pp. 52-68, 2011.
- [21] U. S. Ebarefimia, „*New product development process and its impact on business performance in Nigeria*“. The Business & Management Review, vol. 4, no 4, pp. 25, 2014.
- [22] J. Wind, V. Mahajan, „*Issues and opportunities in new product development: An introduction to the special issue*“. Journal of Marketing Research, vol. 34, no 1, pp. 1-12, 1997.
- [23] M. Senanayake, T. Little, „*Measures for new product development*“. Journal of Textile and Apparel, Technology and Management, vol.1, no. 3, 1-14, 2001.
- [24] Best Practices in New Product Development, *Using Effective Methods to Boost Success* (2013)[https://www.rolandberger.com/en/Publications/pub\\_best\\_practices\\_in\\_new\\_product\\_development.html](https://www.rolandberger.com/en/Publications/pub_best_practices_in_new_product_development.html) dostupno: 10.02.2020
- [25] A. Kumar, J. Antony, T. S. Dhakar, „*Integrating quality function deployment and benchmarking to achieve greater profitability*“, Benchmarking: An International Journal, vol.13, no. 3, pp. 290 – 310, 2006.
- [26] M. Kozak, „*Destination benchmarking*“, Annals of Tourism Research, vol 29, no. 2, pp. 497-519, 2002.
- [27] M. Paunović, Lj. Radovanović, N. Đalić, S. Borić, „*Benčmarking kao deo strategije kvaliteta održavanja pri razvoju modnog proizvoda*“, Tekstilna Industrija, vol. 66, no. 3, pp. 39-46, 2018.
- [28] N. B. Powell, N. L. Cassill, „*New textile product development: Processes, practices, and products*“. Journal of the Textile Institute, vol. 97, no. 2, pp. 155-166, 2006.
- [29] T. Asrofah, S. Zailani, Y. Fernando, „*Best practices for the effectiveness of benchmarking in the Indonesian manufacturing companies*“, Benchmarking: An International Journal, vol. 17, no. 1, pp. 115-143, 2010.