

## Chapter 14

# Digital Model of Bench– Marking for Development of Competitive Advantage

**Vardan Mkrttchian**  
*HHH University, Armenia*

**Alexander Bershadsky**  
*Penza State University, Russia*

**Alexey Finogeev**  
*Penza State University, Russia*

**Artiom Berezin**  
*Penza State University, Russia*

**Irina Potapova**  
*Astrakhan State Architecture and Construction University, Russia*

### ABSTRACT

*The chapter deals with the problems of digital modeling and the study of the interaction of the companies competing within the framework of the bench-marking process for definition, understanding and working out the strategy of effective functioning and increasing competitiveness. The companies are considered in the organizational field, representing iterative aggregate system of a big order with a nonlinear feedback where the order is defined by the number of differential equations. The system is described by coupled Van Der Pol differential equations with random right parts and a time lag. The model is built on the example of the market interaction of the two largest retailer networks. The developed model shows the mechanism of competition of the companies' pairs which are suggested to be investigated within the framework of the bench-marking concept.*

## INTRODUCTION

One of the mechanisms of management of industrial and economic activity of the enterprises is a comparative study, modeling and forecasting based on the principle of bench-marking. Under bench-marking refers to the process of defining and adapting examples of effective functioning of the competitors for the purpose of qualitative improvement of their own enterprise. Models and methods of decision-making for the management of competitiveness in the process of bench-marking allow us to study the advantages and disadvantages of the competition to design and implement an effective development strategy.

The complexity of the competitiveness management consists in the fact that the decision-making process cannot be repelled only by one or more factors that affect competitiveness. It should take them into account in the amount and individually, determining the importance of each of these methods of mining or expertise by taking into account the requirements of updating data as well as the time and situational trends influence factors. Other competitiveness management problem is the need to predict, and the existing predictive models are not fully adequate and cannot guarantee the correctness of the chosen management strategy. This is due to the fact that a lot of competitors in the same market react to the situation in different ways, that it is necessary to take into account when making decisions. Therefore, when creating the methodology of decision support in this area it is advisable to use the methods of scenario analysis. These problems lead to the fact that the company management makes mistakes in the planning and implementation of measures to improve the effectiveness of competitiveness management processes. In this regard, the task of developing and implementing decision support methods for the management of competitiveness using bench-marking principles is an urgent research task in the current market and economic conditions.

The analysis showed that the majority of researchers engaged in study of the general theoretical approaches to modeling management process competitiveness and development of recommendations regarding the production of competitive products. At the same time, little is paid to the creation of software tools automated decision support in the field of enterprise management. Also of note is the problem: lack of adequate mathematical models for evaluating and forecasting of competitiveness, lack of consideration of the hidden laws of the process of competition in the existing models, the complexity of automation and lack of efficiency of decision-making for the management of competitiveness.

This confirms the relevance of research in the field of systematization of technology decision-making and the development of new models and process automation techniques and bench-marking competitiveness management on the basis of modern information and computing and telecommunications technologies. The work is aimed at the creation of models, methods, software and analysis tools and competitiveness management on the basis of the principle of bench-marking for the purpose of decision-making to optimize the company's development strategy in the conditions of the market and crisis.

The aim of the chapter is to improve the efficiency of decision-making for enterprise management and enhance its competitiveness on the basis of digital modeling of bench-marking process, predictive modeling of the dynamics of indicators of economic activity, synthesis and selection of strategies using software and tools.

To achieve the goal the following objectives have been formulated (Berezin, 2014):

1. Perform analytical study of the processes of competitive interactions, management competitiveness and decision-making in the selection of competitive business strategies.

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