

Review of doctoral dissertation*

- Author of the dissertation: *Marko Lončarević*
- Title of the Ph.D. dissertation: *Croatian Railways in the Function of the European Logistics Operator*
- Committee in charge: *Zdravko Zekić, chair; Ratko Zelenika, mentor and member; Željko Radačić, member*
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The doctoral dissertation successfully defended by Marko Lončarević, M.Sc. comprises 8 interconnected chapters and a total of 422 pages with standard text formatting. The list of references consists of 160 bibliographic units, including 36 books, 52 domestic and foreign articles, as well as 72 other sources. The citations and findings of other authors are correctly referenced in 196 footnotes. Text content is supported by 32 tables, 41 charts, 71 graphs, 6 maps and 3 drawings. There is also a list of abbreviations.

The author of the dissertation starts his research with a description of the main theoretical determinants of logistics, logistics operators and modern railways in order to define the basic guidelines for the transformation of Croatian Railways into a European logistics operator. With a comprehensive strategic analysis of Croatian Railways' business operations, the subject matter of the scientific research is clearly determined and the basis for further research and hypothesis verification is created. Through comparison of Croatian Railways' key performance indicator values with those of a number of European railways, the significant lagging behind the restructuring process is scientifically verified, as well as the fact that the development and implementation of a new business model for Croatian Railways should take place as soon as possible. Development of a new model for Croatian Railways is based on redirection of detected negative trends in the key performance indicators whose values are on the industry bottom line, such as: cover ratio, gearing ratio, liquidity ratios, return on assets, return on capital and others.

Based on scientific findings, the author has developed a new model for Croatian Railways which consists of 23 elements whose development potentials have been scientifically evaluated. Evaluation of the development and synergy potentials of each particular element is methodologically based on the implementation of a growth matrix. The applicability of the new Croatian Railways model is tested and clearly confirmed through the implementation of financial modelling as a scientific methodology. Through the integration of financial modelling and scenario planning

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methodology, the author has performed a model sensitivity analysis on internal and external changes. For the purpose of confirming the applicability of the model and its positive influence on the values of the key performance indicators, the author has developed three main scenarios with a number of assumptions related to the values of the key inputs.

In the first chapter of the dissertation, "*Introduction*", the author defines the subject of the research, describes the purpose, goals and hypothesis of the dissertation, evaluates former research, states the scientific methodologies that have been used in the research and presentation of results and presents the structure of the dissertation. The main hypothesis of the dissertation is that the successful implementation of the restructuring project, modernisation and privatisation, supported by a modern strategic management system, can improve the competitive capabilities of Croatian Railways and enable them to be transformed into a European logistics operator.

In the second chapter of the dissertation, "*Theoretical determinants of the logistics and logistics operators*", the author analyses in detail the definition, importance and types of logistics and logistics operators, logistics as science and logistics as activity, definition and classification of logistics systems, the main characteristics of logistics chains and networks as well as the specificities of logistics products. The elements of each type of logistics are summarised. Considering that the restructuring process of Croatian Railways must result in their transformation into a modern logistics enterprise, incorporated into the European traffic system, this part of the dissertation concentrates on the theoretical determinants of modern logistics chains and networks as well as the specificities of logistics products, which represent the basis for the development of a new Croatian Railways model.

"*Main characteristics of modern railways*" is the title of the third chapter of the dissertation. Here the author analyses railways in Central and Eastern Europe in the context of business performance improvement as a result of conducted reforms. By studying the organisational changes conducted by particular railways in the process of restructuring and privatisation, the author defines various options related to the level of integration and private sector participation. An analysis of World Bank data shows that productivity improvement depends on the efficiency of conducted reforms, whereby the author reaches the conclusion that the Croatian Railways restructuring project should be implemented as soon as possible. In this part of the dissertation, Railway capacity utilisation is considered to be the key factor for the successful transformation of Croatian Railways into a European logistics operator. Within this context the author examines a number of capacity utilisation calculation models and defines the prerequisites for the improvement of the level of capacity utilisation. Successful implementation of the new Croatian Railways model requires the development of a modern performance measurement system which is loosely structured in this part of the dissertation. Special attention is paid to the definition

of a wide range of performance indicators applicable to the measurement of the performance of railway enterprises.

In the fourth chapter of the dissertation entitled “*Analysis and evaluation of the Croatian Railways development level*”, the author applies a wide range of business performance analysis methodologies from financial as well as from non-financial perspectives. Particularly noteworthy are the results of the benchmarking analysis conducted on the business performance indicators of Croatian Railways and potential competitors, with respect to the railways representing the best practice. In this way, the significant lagging behind Croatian Railways in the restructuring and modernisation process is scientifically verified. Through an analysis of Croatian Railways’ key performance indicators, the main problems that should be solved through restructuring are defined, while their actual weight is determined through benchmarking. The results of the research indicate the scientific basis of the conclusion that the Croatian Railways restructuring and modernisation project should be implemented in the immediate short term if the transformation of the Croatian Railways into a European logistics operator is to be successful. In this context, particular emphasis is given to low operations costs and differentiation as the main sources of competitive advantage, and their potential is analysed from numerous perspectives.

The fifth chapter of the dissertation, “*Restructuring and privatisation of the Croatian Railways*”, presents relevant characteristics of Croatian Railways as a public railway enterprise in the context of restructuring and privatisation and indicates the need for the reconstruction of Croatian Railways control system. Based on the results of scientific research, the author analyses all potential privatisation models and defines the level of their individual applicability in the context of the new Croatian Railways model. Issues studied in this part of the dissertation include the problem of surplus manpower and focus on potential ways of resolving this problem, since this is one of the most important and the most sensitive prerequisites of successful restructuring and transformation of Croatian Railways into a European logistics operator. With regard to the problem of excess capital in infrastructure and superstructure, the process of their consolidation is elaborated on a scientific basis which is closely related to the development of multimodal transport.

In the sixth chapter entitled “*Croatian Railways in the middle of the European logistics network*” the author researches the phenomenon of the position of Croatian Railways within the European logistics network and, based on scientific findings, elaborates prerequisites for the development of competitive advantages from better utilisation of Croatian Railways’ favourable geographic position. In this part of the dissertation, multimodal transport is considered as one of the key factors for the success of Croatian Railways’ growth and development in the context of sustainable mobility.

“*Proposition of the model of Croatian Railways as a European logistics operator*” is developed in the seventh chapter of the dissertation, where the structure of the model is created through 23 constituent elements. Through the application of a wide range of scientific methods, financial modelling and scenario planning in particular, key interdependencies among individual elements as well as potential synergies are defined. Through financial modelling, the applicability of the proposed model is consistently tested in respect of a wide range of assumptions, while scenario planning methodology provides identification of the level of the model’s internal and external sensitivity. At the end of this part of the dissertation, based on scientific findings so far, the author elaborates in detail the key activities necessary for the successful implementation of the new Croatian Railways model. The proposed strategic management system with its structure is adjusted to the business of the modern logistics operators and is integrated with a performance measurement and compensation system, which is very important for the quick and efficient implementation of the new Croatian Railways model.

In the “*Conclusion*”, as the last section of the dissertation “*Croatian Railways in the function of a European logistics operator*”, the author highlights the key findings that represent a valuable basis for the development and implementation of the new Croatian Railways model, as well as the research results that confirm the defined hypothesis elaborated systematically and concisely, in accordance with the key sections of the dissertation. In this way it is noted that the defined hypothesis has been proven and the goals of the scientific research fulfilled.

The scientific contribution of this doctoral dissertation lies in the fact that the most important characteristics of the rail business are analysed and defined on a scientific basis with respect to the successful transformation of the railways into modern logistics operators. Through benchmarking analyses with potential competitors and industry leaders the significant lagging behind Croatian Railways is identified as well as the key areas for improvement to be achieved as soon as possible. The scientific contribution of this dissertation can be summarised through several key points:

The scientific basis of the results of the research is presented; the research was conducted by implementation of numerous internal and external analysis toolkits, while the results of the strategic analysis enable a high level of compatibility between the developed strategy, defined goals and available resources.

An integrated model of strategic management, performance measurement and compensation system is developed which, in addition to a proposed number of potential key performance indicators, represents the basis for continuous business performance improvement.

Financial modeling methodology is successfully applied by verifying the applicability of the proposed model for achievement of the Croatian Railways business goals,

while the scenario planning methodology is successfully applied for determination of the model's sensitivity to internal and external changes as well as to changes in the dynamics of the model's implementation.

By implementation of the scientific approach it is proved that the cost reduction and differentiation level increase represents a basis for the transformation of the Croatian Railways into a European logistics operator and that these areas have the greatest growth potential. The above-mentioned statements are, in addition to a number of quantitative methods, confirmed by the results of the interviews conducted.

During the research, the author faced a number of limitations, the most important being the lack of actual bibliographic units related to the issues of railways restructuring in transition countries and the unavailability of the data related to Croatian railways' business. The author emphasises that the majority of available scientific papers relate to experience in the restructuring of European railways, whose applicability in the case of Croatian railways is quite limited. Furthermore, a number of assumptions that represent the basis for the financial model and sensitivity analysis were impossible to verify, mainly due to the absence of business plans and development strategy.

The contribution of this doctoral dissertation to economic science can be considered from the applicability perspective as well. The fact is that by implementation of the proposed new model, and by adjustment of the present Croatian Railways restructuring model, the positive effect of a quicker and more effective transformation of Croatian Railways into a European logistics operator can be achieved, which is a goal very closely connected to the strategic goals of the Croatian transport system. The strategic goals of the Croatian transport system are related to the economic goals at the national level, so it can be concluded that the implementation of the proposed model would have a positive impact on the Croatian economy as a whole.

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