Montenegrin Journal of Economics

Vol. 16, No. 2 (2020), 49-58

Evaluation Framework of Seaports' Competitiveness Increasing Projects

VYTAUTAS JUSCIUS[1], JELENA BOGATOVA[2] and MIMO DRASKOVIC[3]

[1] Professor, Department of Economics, Klaipeda University, Klaipeda, Lithuania, e-mail: ek.shmf@ku.lt
[2] PhD student, Department of Economics, Klaipeda University, Klaipeda, Lithuania, e-mail: j.bogatova@gmail.com
[3] Associate Professor, University of Montenegro, Maritime Faculty Kotor, e-mail: rookie@t-com.me

ARTICLE INFO

Received January 17, 2020
Revised from February 25, 2020
Accepted March 26, 2020
Available online June 15, 2020

JEL classification:

L92; 021 ; R42

DOI: 10.14254/1800-5845/2020.16-2.4

Keywords:

Seaports,
competitiveness,
investment project,
evaluation

ABSTRACT

The subject of research in this article is evaluation methods of seaport's competitiveness increasing investment projects. This paper develops evaluation framework for assessing investment projects through all the stages: since determining the need for investment to post-evaluation of the impact made. In the course of the analysis on the investment projects evaluation models the systematic, comparative and logical analysis of the scientific literature has been employed. The theoretical data processing method has been used to summarize and present conclusions and recommendations. It starts with the hypothesis that project evaluation holistic framework suggested by Zidane could be used for assessment of the competitiveness increasing projects in seaports. The article concluded that analysed holistic framework after its adoption and extension is suitable for evaluation of competitiveness increasing projects. The developed investment project evaluation framework can be used both in private and public seaports. It enables the decision makers to correctly assess the situation, the need for investments, the total amount of the capital needed, the implementation timeframe and project scale in accordance with investment project relevance; determine the payback period, cash flows and social welfare generated by the project, their net present value, IRR and discounted payback period. The model also enables to assess additional factors impacting on investment criteria: the effect of inflation on the cost of capital; working capital requirements; taxation; risk and uncertainty. Ex-post BCA allows learning about the accuracy and efficacy of ex-ante BCA and if the purpose of the project was reached in order to better the evaluation technique for future investment projects.

INTRODUCTION

Maritime transport is hugely important for the modern global economy. The increasing development of economic globalization has led to a considerable increase in intercontinental exchanges, stimulating the use of ports and shipping companies with a cheap and quick way to reach most of Europe, Asia, Africa or North America (Ferreira et al., 2018, pp. 41-62). Maritime transport has a great importance to the modern global economy. The European Union is the world's largest trading

block, and 80% of its countries use shipping either to import or to export. There is a great concern for having appropriate networks to ensure the carried load's flow or drainage.

Carriers and seaports are two main components of the international supply chain (Talley et al., 2014, pp. 236-247; Popovic et al., 2017; Kot et al., 2018). Although containerisation has brought logistics and transportation into a new stage (Lam and Gu, 2016, pp. 266-274), several features determine the operation mode and efficiency of the goods transportation and handling.

The leading importance of the sea transport in the international traffic and the rapid growth of cargo transportation in containers (Tavasszy et al., 2011, pp. 1163-1172; Panova & Korovyakovsky, 2013, pp. 175-193; Yap & Lam, 2013, pp. 13-25; Ramos, 2014, pp. 32-41) determine the necessity to develop seaports and their infrastructure. The economies of countries that resort to sea transport as the primary means of global trade are considerably strengthened by the investments in the maritime, inland terminal and warehousing infrastructure.

For example, in Sweden, where sea transport is used for 90% of the country's international traffic, the construction and locations of dry ports were reasonably planned. Their development was determined by the analyses of goods flow, and mainly, by geographical factors. Notably, the economic activities and population are concentrated in the eastern part of the country, whereas the central maritime access, Gothenburg, is on the western coast (Roso et al., 2006, p. 47). Probably for that reason Sweden is one of the examples of outstanding dry ports' evolvement in Europe (Bergqvist et al., 2010, pp. 285-302).

In order to implement competitiveness increasing strategy in seaports various investment projects should be considered and evaluated to determine the most effective solutions. Various definitions of evaluation have been presented over the years. In this paper, the definition from OECD (2000), which defines evaluation as "*A systematic and objective assessment of an ongoing or completed project, program or policy, its design, implementation and results*" is taken into consideration. Seaports operate on a highly competitive global transport market. The sustainable competitiveness was the topic of research by Vojtovic et al. (2016), Koziuk et al. (2019) and Braja and Gemzik-Salwach (2019).

To retain its competitive position a port (terminal) must strengthen its competitive advantages in all fields of activity (Palmowski and Tarkowski, 2016, pp 61-74). In our previous research we created the evaluation model of seaports' performance that enabled assessing the financial situation of the organisation and determining its position in the market in relation to its competitors (Ignasiak-Szulc et al., 2018, pp. 571-579). The proposed economic model assesses the financial and economic status of the ports, and, based on the calculated evaluation index, allows determining the situation of a particular port in relation to its competitors and identifying correlations among various aspects of evaluation. The benchmarking approach used in the model conveys the main determinants in selecting the best suited investment projects.

Y. Zidane et al. (2015, pp. 409-416) emphasize the need to evaluate the project in at least two dimensions: accomplishing the result goal of the project (project delivery at the completion of the project according to plan) and accomplishing the effect goal (effects of the project, once it has been completed). The effects of the project can further be categorized into two dimensions: Effects (benefits) for the organization that undertakes the project and effects (benefits) for society. Therefore, there are three major levels of goals, based on which a project can be looked at and evaluated. When talking about evaluation of a project, it is relevant to look at, among other things, the degree of success (and/or failure) that is associated with the whole project endeavour.

How project success is defined, described and categorized contribute to make a base for discussing criteria for evaluation such as efficiency, effectiveness and so on (Ibid, pp. 409-416).

The hypothesis – project evaluation holistic framework suggested by Zidane et al. (2015) could be used for assessment of the competitiveness increasing projects in seaports.

The outline of this article is as follows: Section 2 includes a literature review on the investment projects evaluation models. Section 3 explains a deterministic model of cash flows, costs and results, as well as the consequence values of the payback period (PP) and net present value (NPV), depending upon project risks. Section 4 contains concluding comments, that is, the evaluation framework for seaport's competitiveness increasing investment projects.

1. LITERATURE REVIEW

C. Serra and M. Kunc (2015, pp. 53-66), referring to previous studies conducted by G. Prabhakar (2008, pp. 3-10), Yu et al. (2005, pp. 428-436), and L. Ika (2009, pp. 6-19) point out that there is no consensus on the definition of project success. However, different criteria are applied to define, describe and / or evaluate overall project success. For instance, A. Shenhar & D. Dvir (2007, pp. 1-288) talk about five dimensions (project efficiency, team satisfaction, impact on the customer, business success, preparing for the future). Concepts that are applied as criteria for evaluation, such as efficiency, effectiveness, sustainability, relevance and impact, can be compared to the three major levels of goals: result goals, effect goals and society goals.

For instance, achieving result goals is related to efficiency, and achieving effect goals and society goals is related to effectiveness, sustainability, relevance and impact in varying degrees based on the context (Zidane et al., 2015, pp. 409-416). According to N. Olsson (2006, pp. 66-74), a project's ability to produce its immediate outcome can be measured in terms of efficiency. He considers effectiveness as the measure of the long-term effects and as doing the right things. K. Samset (2003, pp. 1-233) defines efficiency as the degree to which project outputs have delivered as planned and in accordance with budget; if it could have been done cheaper, more quickly and / or with better quality.

He defines effectiveness as the extent to which the objective has been achieved. Impacts, as defined by OECD (2010, pp. 1-38), are the positive and / or negative changes produced by a development intervention (a project), directly or indirectly, intended or unintended. These impacts are measured by the local social, economic, environmental and other development indicators.

Project evaluation holistic framework suggested by Zidane et al. (2015, pp. 409-416) shows all the elements and their interdependencies, including the timing of their interactions. For example, relevance is measured from the time, where a "trigger" has earlier notified a "need". The concerned persons make the decision to identify those needs. Once they have identified the need, they will establish the goals and objectives of the project; estimate the feasibility; identify uncertainty; estimate cost and time.

The most common method discussed in the scientific literature to evaluate the project's feasibility is Benefit-Cost analyses. Decision-makers rely on the expected benefits and costs that a given project should generate throughout its lifetime when making their decisions. To help aggregate such benefits and costs into a single measure of project worthiness, seaport economists/planners regularly conduct ex-ante Benefit-Cost Analyses (BCAs). Ex-ante means that the analyses are an integrated part of the planning process and that the analyses are based on forecasts, which may or may not match the real outcomes. An ex-ante BCA proceeds by first evaluating the expected change in the benefits and costs of an undertaking compared to a "*do-nothing or do-minimum*" situation, and all the benefits and costs are measured in monetary terms (Odeck & Kjerkreit, 2019, pp. 277-294).

An ex-ante BCA further proceeds by comparing the discounted monetized benefits to the discounted costs. The result of such a comparison is the Net Present Value (NPV). If the NPV is positive, then the project is considered to be profitable from a socioeconomic perspective because its benefits exceed its costs; otherwise, the project is deemed unprofitable. In the early project phase ex-ante BCA is useful for demonstrating the potential that a project has at that early stage. The

decision where it is helpful is therefore the go-ahead decision to continue planning for different options for the same project.

The BCA is most useful for

- selecting the most appropriate alignment/option of the same project and
- selecting the appropriate projects from a pool of projects for funding/resource allocation when funds/resources are limited.

This class of analyses is the most common in the transportation literature, in which the major issue seems to be the allocation of funds. There has been criticism of using BCAs as appropriate tools for decision-making because a BCA does not include all factors worth considering in decision-making and some important impacts are not valued in monetary terms.

Table 1. Advantages and Disadvantages of the Five BCAs techniques

Technique	*Definition*	*Advantages*	*Disadvantages*
Accounting rate of return (ARR)	Average accounting profit over the life of the project divided by the initial or average investment	- quick and easy to calculate, simple to use	- based on accounting profit rather than cash flows; - a relative measure and so no account is taken of the size of the project; - ignores timing of cash flows and the cost of capital.
Payback	The point where the cumulative value of a project's cash flows becomes positive	- considers liquidity; - looks only on relevant cash flows.	- ignores the timing of cash flows; - ignores cash flows that occur after the payback point; - ignores the cost of capital, i.e. the time value of money.
Net present value (NPV)	The total present values of each of a project's cash flows, using a present value discount factor	- uses relevant cash flows; - allows for the time value of money; - absolute measure, and therefore useful for comparison.	- requires estimate of the cost of capital.
Internal rate of return (IRR)	A discount factor at which the NPV becomes zero	- Does not need the estimate of the cost of capital.	- no account is taken of the size of the project; - it is difficult to use if changes in the cost of capital are forecast.
Discounted payback	The point where the cumulative value of a project's discounted cash flows becomes positive	- considers liquidity; - looks only at relevant cash flows; - allows for the time value of money.	- requires estimate of the cost of capital; - ignores cash flows that occur after the payback point.

Additional factors impacting on investment criteria calculations are: the effect of inflation on the cost of capital; working capital requirements; length of project; taxation and risk and uncertainty. After the implementation of the project some authors propose the ex-post evaluation (Boardman et al., 2011, pp. 69-84; Anguera, 2006, pp. 291-315; Taroux et al., 2005, p. 14; Meunier, 2010, pp. 1-16). They concluded that ex-ante and ex-post BCAs comparison studies are potentially the most useful studies for learning about the accuracy and efficacy of cost-benefit analysis for decision-makers and evaluators. Their major findings were that ex-post BCAs are difficult because

of the problem of replicating the reference situation, particularly regarding traffic, and that there are divergences between the forecasted benefits and costs and their actual outcomes. A. Boardman et al. (Ibid.) found that contrary to what might have been expected, the largest source of differences between ex-ante and ex-post BCA evaluations was not errors in forecasts or differences in the evaluation of intangible benefits but rather the major differences between the declared and actual construction costs of the project. That is, the largest errors arose from what most analysts would have thought were the most reliable figures entered into the BCA (Odeck & Kjerkreit, 2019, pp. 277-294). The most recent study (Kelly et al., 2015, pp. 83-91) reported ex-post BCA studies of projects across European countries.

They studied the project-level outcomes with respect to the BCAs of 10 large transport projects spread over eight countries. They compared the ex-ante and ex-post cost-benefit analyses and found that although much attention in the literature has been paid to the issue of optimism bias over the last decade, optimism bias remained prevalent. The ex-ante BCAs yielded significantly higher NPV results compared to the ex-post results. They also found a clear need to improve the quality and consistency of ex-ante analyses, particularly in the areas of capital cost estimation, travel demand modelling and risk analyses. As the literature review shows there are ample works regarding the evaluation of investment projects in transport sector in general. However, as the research showed there are only capacity (throughput of cargo) increasing, minimizing congestion projects case studies, and no general competitiveness increasing project evaluation frameworks designed specifically for seaports. Thus, this paper's purpose is to develop evaluation framework for seaport's competitiveness increasing investment projects.

2. RESEARCH METHODOLOGY

In the course of the analysis on the investment projects evaluation models the systematic, comparative and logical analysis of the scientific literature has been employed. The scientific literature was selected by relevance to the topic. The theoretical data processing method has been used to summarize and present conclusions. In our previous research we created the evaluation model of seaports' performance that enabled assessing the financial situation of the organisation and determining its position in the market in relation to its competitors (Ignasiak-Szulc et al*.,* 2018, pp. 571-579). The proposed economic model assesses the financial and economic status of the ports, and, based on the calculated evaluation index, allows determining the situation of a particular port in relation to its competitors and identifying correlations among various aspects of evaluation.

In this paper we adopt and extend the Project Evaluation Holistic Framework for seaports' competitiveness increasing projects. We incorporate the evaluation model of seaports' performance phase, as the "trigger", to identify the need for investment. The benchmarking approach used in the model conveys the main determinants in selecting the most relevant and effective investment decision. Also we adopt the ex-ante and ex-post BCAs techniques in the frame of determining the project's feasibility and projects success respectively.

3. RESULTS

The developed Framework for seaport's competitiveness increasing investment projects consists of six stages (see figure 1).

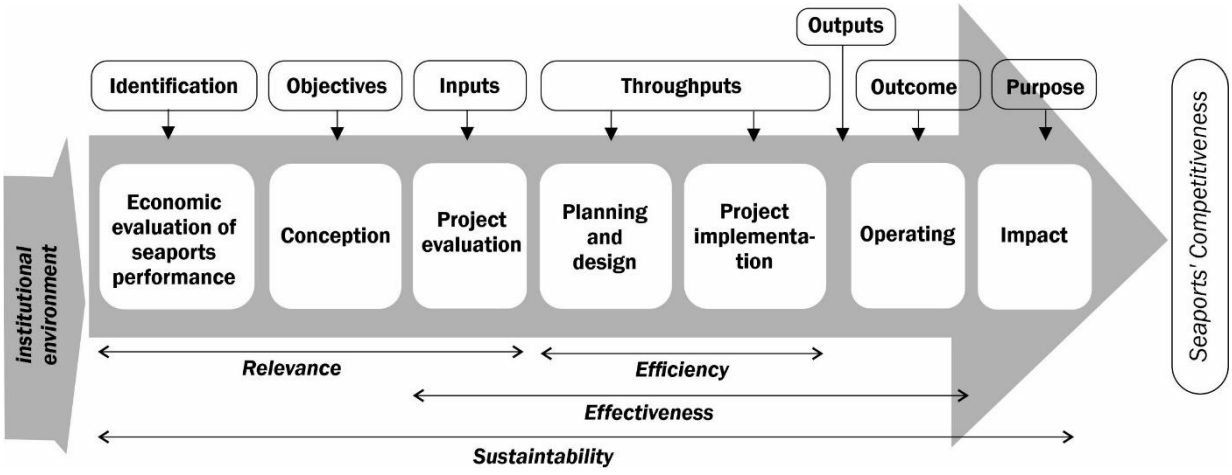

Figure 1. Seaport's competitiveness increasing investment projects evaluation framework

Source: created by the authors based on Project evaluation holistic framework suggested by Zidane et al., 2015, pp. 409-416; Draskovic, 2019; p. 229.

Economic evaluation of seaports performance stage identifies the need for investment and main determinants. The Conception stage consists of formulating the investment projects to satisfy the need. Project evaluation is performed with the help of Ex-ante BCA of suggested projects and/or investment alternatives (object, time scale, etc.). During this stage of project assessment the financial and socio-economic evaluation takes place:

- determining total investment cost;
- project implementation timeframe (relevance);
- CF generated by the project;
- payback;
- discount factor;
- NVP;
- IRR;
- discounted payback.

All calculations are made taking into consideration such factors as inflation, taxation, risk and uncertainty (optimistic, pessimistic, realistic scenarios). Total investment cost and generated CF are calculated using the model suggested by Balliauw & Matteo (2019, pp. 249-264). The model equations are summarised in Figure 2.

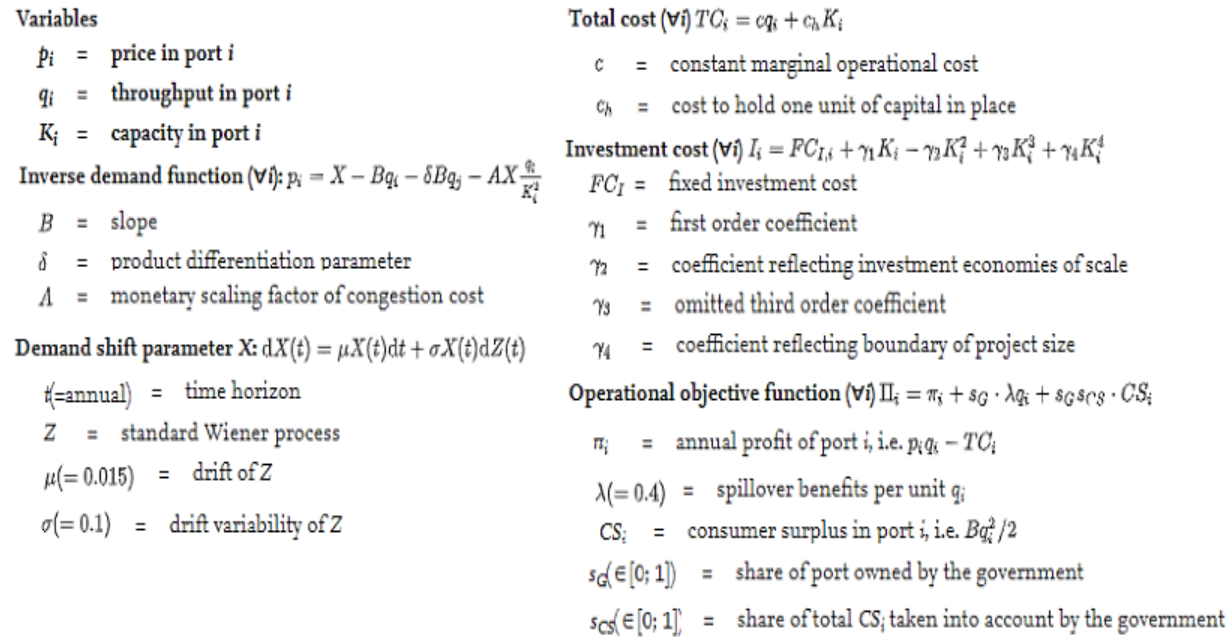

Figure 2. Balliauw & Matteo Model overview

Source: Balliauw & Matteo, 2019, pp. 249-264.

The product market's heterogeneity is expressed through the differentiation parameter δ in the inverse demand function, giving rise to the full price or gross willingness to pay, ρ_i, for port i at time t (Xiao et al., 2012, pp. 629-652; Kamoto & Okawa, 2014, pp. 503-522): $p_i(t) = X(t) - B_{q_i}(t) - ?\,?\,B_{q_j}(t) - AX\frac{q_i}{K_i^2}$ with X being the demand shift parameter, q_i the throughput of port i and q_j the throughput of port j ($j \neq i$) and $AX\frac{q_i}{K_i^2}$ being the congestion unit cost term. Depending on the location and services of the ports, parameter δ can vary between zero and one. In the case of an isolated port not experiencing competition from another port, e.g., a sole port on an island, δ would equal 0 and the model would simplify to a monopoly model. For two ports at the same location and offering the same services, δ would equal 1.

Since the situations with both private and public ports are considered, it is not sufficient to only consider annual profit $\pi_i = (p_i - c) \cdot q_i - c_h K_i$ (with c the marginal operational cost and c_h the capital holding cost) maximisation, which is the objective of a private port. Governments also consider positive externalities or local spill over benefits per unit of throughput handled (e.g. employment and local industry growth), and consumer surplus in their social welfare (SW_i) maximisation (Xiao et al., 2012, pp. 629-652; Jiang et al., 2017, pp. 112-130). Social welfare generated by port i is calculated as the sum of the profit of port i, the spill over benefits $\lambda \cdot q_i$ and a share s_{CS} of consumer surplus generated by port i (CS_i), since some governments only consider the part that is relevant for the region they govern.

Planning and design stage means choosing the best investment option and design of the selected project. During project implementation stage project management is the main focus, in order to implement the project in decided timeframe and not to exceed the budget. Operating stage determines the true outcome of the project and if the desired impact was reached. During this stage the ex-post BCA is performed in order to learn about the accuracy and efficacy of ex-ante BCA.

CONCLUSIONS

In order to implement competitiveness increasing strategy in seaports various investment projects should be considered and evaluated to determine the most effective solutions. When talking about evaluation of a project, it is relevant to look at, among other things, the degree of success (and/or failure) that is associated with the whole project endeavour. This paper analyses the project evaluation methods and develops evaluation framework for seaport's competitiveness increasing investment projects.

The evaluation framework consists of six stages. Economic evaluation of seaports performance stage identifies the need for investment and main determinants. Taking into consideration that seaports operate in highly competitive environment it is important to determine the situation of a particular port in relation to its competitors and identify correlations among various aspects of evaluation. The benchmarking approach used in the model conveys the main determinants in selecting the most relevant and effective investment decision. The Conception stage consists of formulating the investment projects to satisfy the need. Project evaluation is performed with the help of Ex-ante BCA of suggested projects and/or investment alternatives (object, time scale, etc.). Planning and design stage means choosing the best investment option and design of the selected project. During project implementation stage project management is the main focus, in order to implement the project in decided timeframe and not to exceed the budget. Operating stage determines the true outcome of the project and if the desired impact was reached. During this stage the ex-post BCA is performed in order to learn about the accuracy and efficacy of ex-ante BCA.

The developed investment project evaluation framework can be used both in private and public seaports. It enables the decision makers to correctly assess the situation, the need for investments, the total amount of the capital needed, the implementation timeframe and project scale in accordance with investment project relevance; determine the payback period, cash flows and social welfare generated by the project, their net present value, IRR and discounted payback period. The model also enables to assess additional factors impacting on investment criteria: the effect of inflation on the cost of capital; working capital requirements; taxation; risk and uncertainty. Ex-post BCA allows learning about the accuracy and efficacy of ex-ante BCA and if the purpose of the project was reached in order to better the evaluation technique for future investment projects.

REFERENCES

Anguera, R. (2006), "The channel tunnel – an ex-post economic evaluation", *Transportation Research Part A: Policy and Practice,* Vol. 40, No. 4, pp. 291-315, doi:10.1016/j.tra.2005.08.009

Balliauw, M., Kort, P. M., Zhang, A. (2019), "Capacity investment decisions of two competing ports under uncertainty: A strategic real options approach", *Transportation Research Part B: Methodological,* No. 122, pp. 249-264, doi:10.1016/j.trb.2019.01.007

Bergqvist, R., Falkemark, G., Woxenius, J. (2010), "Establishing intermodal terminals. *World Review of Intermodal Transportation Research,* Vol. 3, No. 3, pp. 285-302, doi:10.1504/WRITR.2010.034667

Boardman, A.E., Mallery, W.L., Vining, A.R. (1994), "Learning from ex ante/ex post cost-benefit comparisons: The Coquihalla highway example", *Socio-Economic Planning Sciences,* Vol. 28, No. 2, pp. 69-84. Doi: 10.1016/0038-0121(94)90007-8

Braja, M., Gemzik-Salwach, A. (2019), "Competitiveness of high-tech sectors in the European Union: A comparative study", *Journal of International Studies*, Vol. 12, No. 2, 213-227. doi:10.14254/2071-8330.2019/12-2/13

Draskovic, M. (2019), "Perception of the Impact of Negative Externalities on the Logistics Development of Adriatic Seaports of Koper, Rijeka and Bar", *Amfiteatru Economic*, Vol. 21, No. 5, pp. 228-239

Ferreira, D.C., Marques, R.C., Pedro, M.I. (2018), "Explanatory variables driving the technical efficiency of European seaports: An order-α approach dealing with imperfect knowledge", *Transportation Research Part E: Logistics and Transportation Review,* No. 119, pp. 41-62, doi:10.1016/j.tre.2018.09.007

Ignasiak-Szulc, A., Juscius, V., Bogatova, J. (2018), „Economic evaluation model of seaports' performance outlining competitive advantages and disadvantages", *Engineering Economics,* Vol. 29, No. 5, pp. 571-579. doi: 10.5755/j01.ee.29.5.21363

Ika, L.A. (2009), "Project success as a topic in project management journals", *Project Management Journal,* Vol. 40, No. 4, pp. 6-19.

Jiang, C., Wan, Y., Zhang, A. (2017), "Internalization of port congestion: Strategic effect behind shipping line delays and implications for terminal charges and investment", *Maritime Policy and Management,* Vol. 44, No. 1, pp. 112-130. doi:10.1080/03088839.2016.1237783

Kamoto, S., Okawa, M. (2014), "Market entry, capacity choice, and product differentiation in duopolistic competition under uncertainty", *Managerial and Decision Economics,* Vol. 35, No. 80, pp. 503-522, doi:10.1002/mde.2638

Kelly, C. et al. (2015), "Ex post appraisal: What lessons can be learnt from EU cohesion funded transport projects?", *Transport Policy,* Vol. 37, pp. 83-91, doi:10.1016/j.tranpol.2014.09.011

Kim, E., Hewings, G.J.D., Amir, H. (2017), "Economic evaluation of transportation projects: An application of financial computable general equilibrium model*", Research in Transportation Economics,* Vol. 61(C), pp. 44-55. doi:10.1016/j.retrec.2016.09.002

Koziuk, V., Hayda, Y., Dluhopolskyi, O., Klapkiv, Y. (2019). "Stringency of environmental regulations vs. global competitiveness: Empirical analysis", *Economics and Sociology*, Vol. 12, No. 4, pp. 278-298. doi:10.14254/2071-789X.2019/12-4/17

Kot, S., Goldbach, I.R., Ślusarczyk, B. (2018). "Supply chain management in SMEs – Polish and Romanian approach", *Economics and Sociology*, Vol. 11, No. 4, pp. 142-156. doi:10.14254/2071-789X.2018/11-4/9

Lam, J.S.L., Gu, Y. (2016), "A market-oriented approach for intermodal network optimisation meeting cost, time and environmental requirements", *International Journal of Production Economics,* No. 171, pp. 266-274, doi:10.1016/j.ijpe.2015.09.024

Meunier, D. (2010). (2010), "Ex-post evaluation of transport infrastructure projects in France: Old and new concerns about assessment quality", *The 12th World Conference on Transportation Research,* Lisbon, pp. 1-16. http://s3.amazonaws.com/zanran_storage/www.civil.ist.utl.pt/ContentPages/694954807.pdf

Odeck, J., Kjerkreit, A. (2019), "The accuracy of benefit-cost analyses (BCAs) in transportation: An ex-post evaluation of road projects", *Transportation Research Part A: Policy and Practice*, Vol. 120(C), pp. 277-294, doi:10.1016/j.tra.2018.12.023

OECD glossary of evaluation and results based management terms (2010), Organization for Economic Co-operation and Development, Paris.

Olsson, N.O.E. (2006), *Management of flexibility in projects* doi:10.1016/j.ijproman.2005.06.010

Palmowski, T., Tarkowski, M. (2016), "Development of sea port in Gdynia", *Baltic Region,* Vol. 3, pp. 61-74, doi: 10.5922/2079-8555-2016-3-4

Panova, Y., Korovyakovsky, E. (2013), "Perspective reserves of Russian seaport container terminals", *World Review of Intermodal Transportation Research,* Vol. 4, No. 2-3, pp. 175-193, doi:10.1504/WRITR.2013.058979

Popovic, T., Kraslawski, A., Barbosa-Póvoa, A., Carvalho, A. (2017), "Quantitative indicators for social sustainability assessment of society and product responsibility aspects in supply chains", *Journal of International Studies*, Vol. 10, No. 4, pp. 9-36. doi:10.14254/2071-8330.2017/10-4/1

Prabhakar, G.P. (2008), "What is project success: A literature review", *International Journal of Business and Management,* Vol. 3, No. 9, pp. 3-10.

Ramos, S.J. (2014), "Planning for competitive port expansion on the U.S. eastern seaboard: The case of the savannah harbor expansion project", *Journal of Transport Geography,* Vol. 36, pp. 32-41, doi:10.1016/j.jtrangeo.2014.02.007

Roso, V., Woxenius, J., Olandersson, G. (2006), *Organisation of Swedish dry port terminals* (a report in the EU INTERREG North sea programme, Meddelande 123), Göteborg, Sweden, Division of Logistics and Transportation, Chalmers University of Technology, https://www. researchgate.net/profile/Johan_Woxenius/publication/267250525_Organisation_of_Swedish_dry_port_terminals/links/54cb86580cf2240c27e84a9c.pdf

Samset, K. (2003), *Project evaluation: Making investments succeed*, Tapir Academic Press, Trondheim.

Serra, C.E.M., Kunc, M. (2015), "Benefits realisation management and its influence on project success and on the execution of business strategies", *International Journal of Project Management,* Vol. 33, No. 1, pp. 53-66, doi:10.1016/j.ijproman.2014.03.011

Shenhar, A.J., Dvir, D. (2007), *Reinventing project management: The diamond approach to successful growth and innovation*. Harvard Business Press, Boston, MA.

Talley, W. K., Ng, M., Marsillac, E. (2014), "Port service chains and port performance evaluation", *Transportation Research Part E: Logistics and Transportation Review,* Vol. 69, pp. 236-247, doi:10.1016/j.tre.2014.05.008

Taroux, J.P., Chapulut, J.N., Mange, E. (2005), "The new ex-post evaluation methods for large projects in france", *Proceedings of ETC 2005*, Strasbourg, 18-20 September 2005*,*

Tavasszy, L., Minderhoud, M., Perrin, J., Notteboom, T. (2011), "A strategic network choice model for global container flows: Specification, estimation and application", *Journal of Transport Geography,* Vol. 19, No. 6,pp. 1163-1172, doi:10.1016/j.jtrangeo.2011.05.005

Vojtovis, S.,Navickas, V., Gruzauskas, V. (2016), "Strategy of sustainable competitiveness: methodology of real-time customers' segmentation for retail shops", *Journal of security and sustainability issues.* Vol. 5, iss. 4, pp. 489-499. DOI: 10.9770/jssi.2016.5.4

Xiao, Y., Ng, A.K.Y., Yang, H., Fu, X. (2012), "An analysis of the dynamics of ownership, capacity investments and pricing structure of ports", *Transport Reviews,* Vol. 32, No. 5, pp. 629-652, doi:10.1080/01441647.2012.709888

Yap, W.Y., Lam, J.S.L. (2013), "80 million-twenty-foot-equivalent-unit container port? Sustainability issues in port and coastal development", *Ocean and Coastal Management,* No. 71, pp. 13-25, doi:10.1016/j.ocecoaman.2012.10.011

Yu, A.G., Flett, P.D., Bowers, J.A. (2005), "Developing a value-centred proposal for assessing project success", *International Journal of Project Management,* Vol. 23, No. 6, pp. 428-436, doi:10.1016/j.ijproman.2005.01.008

Zidane, Y.J., Johansen, A., Ekambaram, A. (2015), "Project evaluation holistic framework – application on megaproject case", *Procedia Computer Science,* No. 64, pp. 409-416, doi:10.1016/j.procs.2015.08.532