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# PERFORMANCE MANAGEMENT

# PERFORMANCE MANAGEMENT METHODOLOGY: INTEGRATIVE APPROACH

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***Abstract:*** *Performance management is not a new methodology. In fact, there is no unique performance management methodology. It is an integrated concept comprised of many separated methodologies. Those individual methodologies should and must be integrated, linked and applied together, since this is the only way they can achieve its own full performance. More importantly, their integration and enhancement achieved through the performance management methodology provides the synergy that creates superior business performance as a whole. This paper will present the most important methodologies that represent an integral part of performance management methodology.*

***Keywords****: performance management, methodology, performance indicators*

## 1. INTRODUCTION

There is no unique performance management methodology: performance management goes through the whole process of managerial planning, executing and control. Performance management is not new methodology; it is approach that tightly integrates business improvements and analytical methodologies already known to management and employees. It involves methodologies, metrics, processes, software tools and systems that manage the performance of an organization as a whole. Performance management can be seen as an umbrella concept that integrates business and financial information into unique support framework for planning and decision-making. It includes strategic mapping, balanced scorecard, managerial accounting, customer chain value, cost management, budgeting, forecasting and planning. These methodologies inspire other key solutions, such as supply chains management, risk management, human resources system management, lean management and six sigma (Cokins, 2009).

Performance management integrates methodologies and their support systems in order to provide synergy that would not exist if they would be implemented isolated one from another (Cokins, 2009). It is holistic model in which all parts must be combined and connected in order to realize organizational strategy in a sensible and coherent way (Hope & Player, 2012). The more those methodologies are integrated, unified and enriched with all kind of analyses, the more powerful performance management will be. Integrated methodologies, combined with analytics, represent a key for completing full vision of performance management framework (Cokins, 2009).
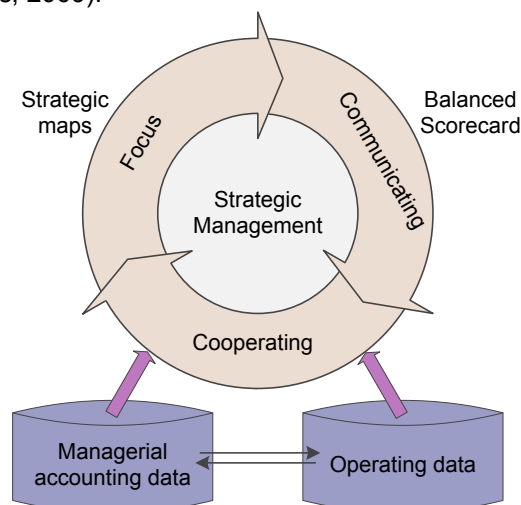


**Figure 1.** Performance management integrative cycle (Cokins, 2004)

The implementation of performance management is tightly connected with these managerial approaches (Hagos & Pal, 2010): Sigma Strategy, Balanced Scorecard, Activity Based Costing, Total Quality

Management, Economic Value Added (Economic Profit), Integrated Strategic Measurement, Theory of Constrains. Figure 2. illustrates independent methodologies that make performance management.
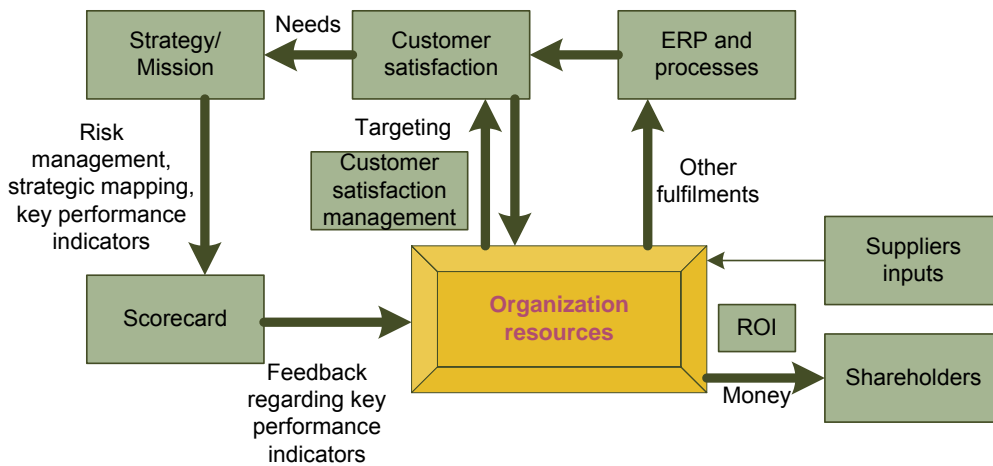


**Figure 2.** Linked performance management methodologies (Cokins, 2009)

Many performance management components exists for decades now, while some of them are only recently became popular. Some of these components are already partially or completely implemented in many organizations, while performance management is simply enriches them in order to be more harmonized with other components (Cokins, 2004).

## 2. KEY PERFORMANCE INDICATORS

Key performance indicators are key management instruments used by managers in order to understand if their organization is seeking in the right direction or is turning from the road of company progress (Marr, 2012). Key performance indicators represent results or outcomes identified as key for archiving high performance and they provide baseline for goals setting and performance measurement (Armstrong, 2009). They measure things that are of strategic importance for organization, therefore it is necessary to define strategy first and afterwards to define and link indicator to it. Key performance indicator is indicator that is really meaningful, since everything and anything can be measured. If all indicators are considered to be the key ones, than none of them will standout and get the attention it deserves (Schiff, 2008). The proper set of indicators will put the light on the performances and emphasize areas that need special attention (Marr, 2012). The number of key performance indicators depends on the type of organization, but usually organizations have six to twelve key indicators and potentially dozen others that support the key ones (Armstrong, 2009).
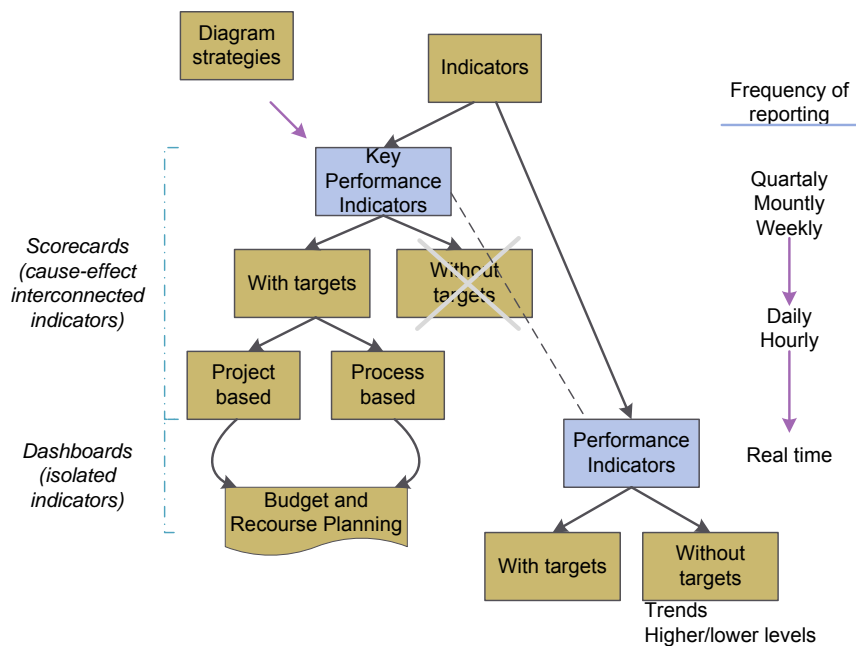


**Figure 3.** Key performance indicators, scorecards and dashboards (Cokins, 2009)

Sets of key performance indicators are presented on the scorecards, which report on organizational performances (Armstrong, 2009). When putting performances of scorecards, one should not be carried away

in trying to include as many indicators as possible. Unwritten rule is that it is often enough to have six to ten key performance indicators (Dagan, 2007). Integrated key performance indicator framework is shown on Figure 3. Performance frameworks, dashboards or scorecards are often in use for grouping key performance indicators into displays or reports so they can represent immediate insight into business performance (Marr, 2012).

It is important that key performance indicators provide information and answer about what company needs to know, therefore it is necessary to determine information needed and questions that need to be answered, first. Marr (2012) developed key performance questions (KPQs), where key performance question precisely says exactly what manager needs to know. In that way key performance questions represents guide for selection of meaningful indicators (Marr, 2012).

## 3. BALANCED SCORECARD

Balanced scorecard is widely accepted performance management methodology, and many companies use it for measuring their performances (Hagos & Pal, 2010). Balanced scorecard basically uses integral performance management in order to follow and adjust business strategy (ten Have, ten Have, & Stevens, 2003). The managers often use it for goal clarification, monitoring and structuring mechanisms for initiating interventions. These are the same steps that performance management applies, which results in using balanced scorecard as a basis for performance management activities in organization (Hagos & Pal, 2010).

Traditionally, dashboards seek to focus solely on financial performance indicators (Armstrong, 2009), while the inclusion of nonfinancial information into financial ones is become known as a balanced scorecard (Avis, 2009). The goal of balanced scorecard was to battle the tendency of focusing to short-term financial reports only, because business success needs balanced usage of financial and operational indicators (Kaplan & Norton, 1992) (Kaplan & Norton, 1996).

Organizations are trying to find a ways for observing performance indicator from the perspective of business as a whole, since they must be able to measure financial as well as nonfinancial performances (Hagos & Pal, 2010). Understanding the connection between short-term work of employer with the long-term organizational goals is a key for successful performance management. Balanced scorecard transforms the vision of an organization into understandable goals on every organizational level (Jones, 1999). Balanced scorecard is the way to present former, present and future goals with the easily understandable set of performance indicators (Horngren, Sundem, Stratton, Burgstahler, & Schatzberg, 2008). Balanced scorecard was developed to measure performance toward organizational goals, serving as an indicator of the overall organizational efficiency (Hagos & Pal, 2010).

Kaplan and Norton believe that balanced scorecard approach focuses attention on the vision and strategy, rather than control (Kaplan & Norton, 1992). They imply that this approach can help in harmonization of individual performances with overall strategy, since it motivates people to engage themselves in communication and education, goals setting process and links rewards with performance indicators (Kaplan & Norton, 1996). The original Kaplan and Norton concept asks managers to answer four basic questions, which means observing four connected perspectives (Kaplan & Norton, 1996). Beside usual financial perspective, balanced scorecard motivates managers to incorporate customer's perspective, operations and organizational innovation and learning capabilities (ten Have, ten Have, & Stevens, 2003).
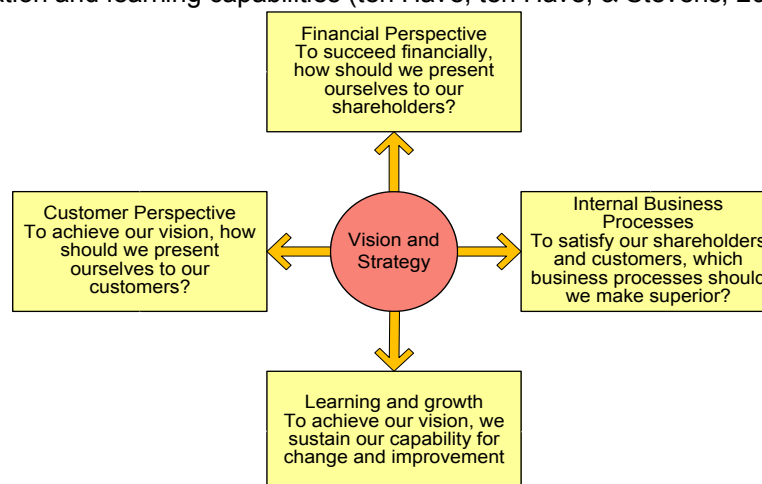


**Figure 4.** Four perspectives of vision and strategy conversion (Kaplan & Norton, 1996)

Balanced scorecard provides answer to four main questions (ten Have, ten Have, & Stevens, 2003):
- What is important for company shareholders?
- How do customers perceive company?
- Which internal processes can add value?
- Is company innovative and ready for the future?

The balance is a key word. Each area is equally important and each should have no more than four to five indicators. These indicators should reflect the organizational culture. (Jones, 1999). Basically, balanced scorecard is a selection of adequate indicators; if key performance indicators are wrong, than behavior, priorities and employers decisions will not be harmonized with the vision and the strategy of the organization (Cokins, 2009). Balanced scorecard indicators depend on the nature of the company (ten Have, ten Have, & Stevens, 2003). They must not be just a tool for control of behavior and evaluation of past performances, but should be the basis for management system that communicate the strategy, harmonize individuals and teams with the strategy, set long-term strategic goals, allocate short-term and long-term resources and provide feedback and learning about strategy (Armstrong, 2009).

Balanced scorecard methodology, developed by Kaplan and Norton (1996), recognized faults of focusing on short-term financial results. It improves organizational performances by moving attention from financial indicator toward nonfinancial business indicators that reflect customers, internal processes, innovation, learning and growth (Cokins, 2009). And, in return, these indicators lead to better financial results. Balanced scorecard provides insight into aggregate financial consequences of nonfinancial indicators (ten Have, ten Have, & Stevens, 2003).

It is important to stress than none individual methodology, including balanced scorecard cannot achieve results if it is not integrated with other performance management methodologies. Implementation of balanced scorecard often does not succeed in providing projected benefits purely because it is not integrated with performance management processes, especially with those used on operational level (Cokins, 2004). It is believed that 80 % of companies than do not integrate balanced scorecard with performance management methods and tools will give up on it and go back to less organized and less effective set of metrics (Leahy, 2003).

## 4. STRATEGIC MAPS

Strategic maps in a term of strategy are often compared to financial analysis: in the same way that financial analysis explains company's financial health, the strategic maps explain strategic health of a company. Strategic maps represent a tool that help in defining strategy and facilitate keeping organization on the right track by altering and modifying strategy if it is necessary to change that track (Cokins, 2004).
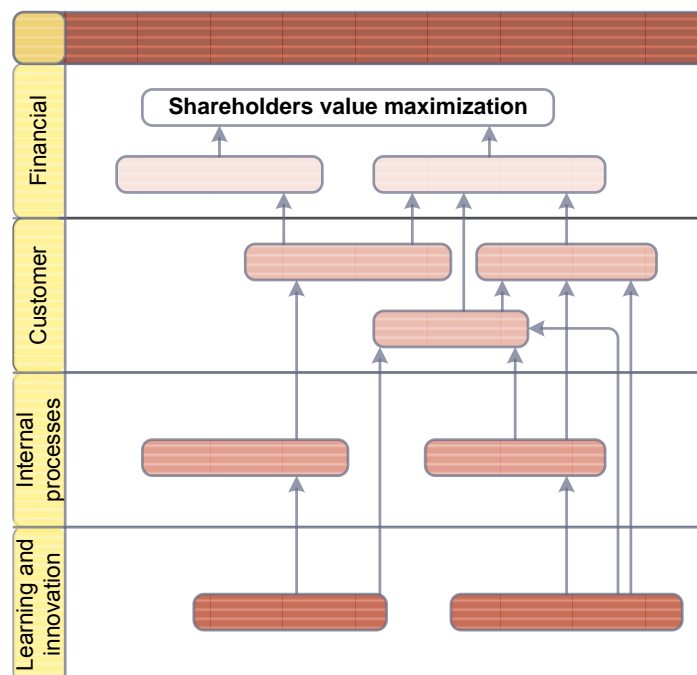


**Figure 5.** Generic strategic map (Cokins, 2009)

Strategic maps are actually diagrams that show logic of the way that organizations interact in creation of overall performance (Bourne, Franco, & Wilkes, 2003). These maps show connection between cause and effect by which certain improvements create desired results. They are means for description of the elements of organizational system and connections between them. In that way they become guide mark for system improvements that leads to performance improvements. Furthermore, strategic maps provide employers with clear connection between their work and overall goal and give visual insight into critical goals of organization and their relations that run organizational performances (Armstrong, 2009).

## 5. DASHBOARDS

Dashboards are graphical presentations designed to transfer key performance indicators from intranet systems of organization to a broader audience so that they can assimilate with them and act accordingly simply and quickly (Armstrong, 2009).
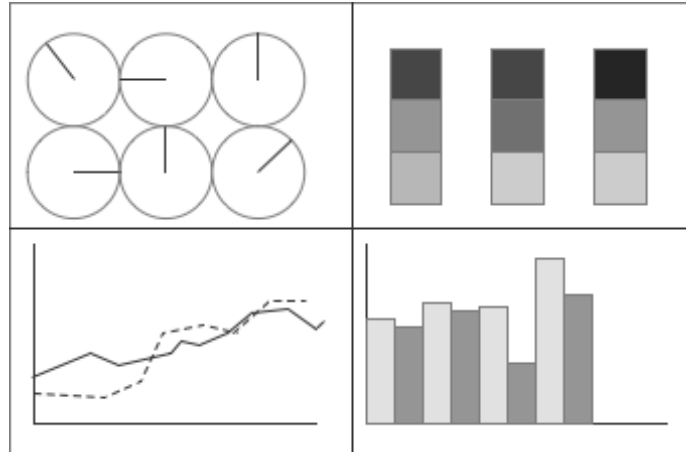


**Figure 6.** Examples of charts on the dashboards (Armstrong, 2009)

Dashboards can be described as "delivery vehicles" (Dover, 2004), since they make performance information available when it is needed, where it is needed (Armstrong, 2009).

Dashboards enable fast and convenient way for monitoring progress by referencing to an adequate indicator, enabling fast corrective action if it is needed (Dagan, 2007). They can be complemented by drawings, traffic lights, charts and tables, but they should not be overcrowded and in that way hide important indicators (Armstrong, 2009).

## 6. ACTIVITY BASED COSTING

Performance management is considerably supported with richer information provided by ABC – Activity Based Costing (Cokins, 2004). Traditional costing models allocate indirect costs according to the volume. As a result, product costs with high volume become overvalued, while products with low volume become undervalued. On the contrary, activity based costing calculates real costs of products, customers or services by adding indirect costs according to the activity performed instead of volume (ten Have, ten Have, & Stevens, 2003).

Activity based costing is not solely accounting system. Also, it is much more than accounting management information system. It shifts managerial accounting into managerial economics and represents change management tool. It is socio-technique tool and its main value is irrefutable information based on facts that can be used by employees and managers in order to build business situations and quickly recognize business opportunities and challenges (Cokins, 2004).

The principles of activity based costing must not be applied only to products, but to different distribution channels and customers. The goal is to apply direct cost to any consumer recourse. As for shared recourses, they should be tracked by using measurable drivers that reflects consumption rate instead of arbitrary cost allocation (Cokins, 2009). The starting point for activity based costing is that activities cause costs, not the products or consumers. As different products need different activities, while each of them uses different recourses in different amounts, the cost allocation must be pondered in accordance with that (ten Have, ten Have, & Stevens, 2003).
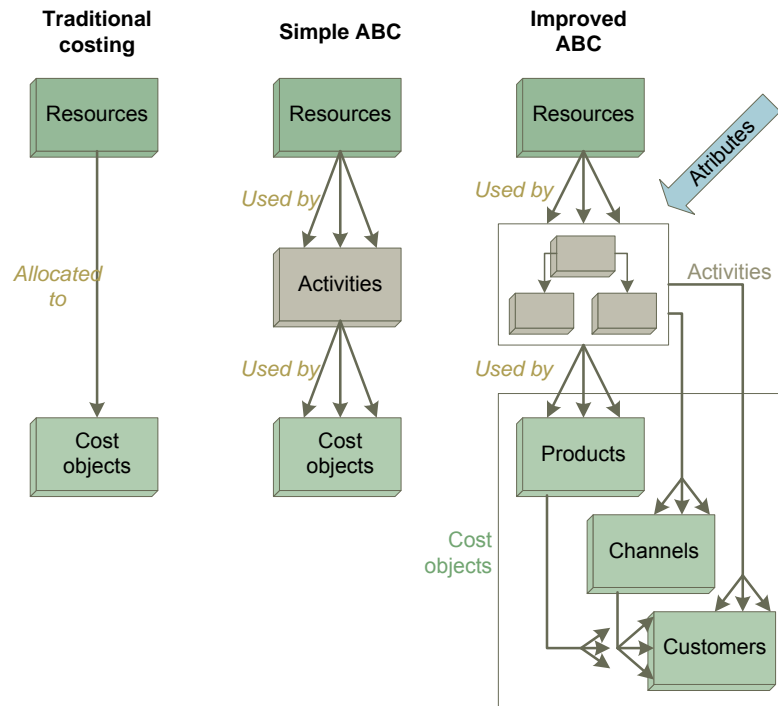
**Figure 7.** Comparative overview of costing systems (Cokins, 2009)

ABC analyses can be applied through following steps (ten Have, ten Have, & Stevens, 2003):
- Defining cost objects, indirect activities and recourses used for indirect activities.
- Assessing costs by indirect activity.
- Identifying cost drivers for each recourse.
- Calculating total indirect costs of product for the type of cost object.
- Dividing total costs with indirect cost volume by individual cost object.

Recently, Time-Driven Activity-Based Costing – TDABC is becoming the more advanced managerial accounting technique. When it is possible that considerable part of resources consumption exists in repetitive process, activity drivers from ABC model can be replaced with average (standard) time necessary for each activity (Kaplan & Anderson, 2004).

The difference between TDABC and ABC system in in fact that Time-Driven Activity-Based Costing is capacity sensitive and calculates standard activity cost by using standard rates. On the other hand, ABC system is not capacity sensitive and calculates activity cost of each period as real cost. Time-Driven Activity-Based Costing requires investment in measuring event times and to constantly maintain them. ABC simply requires amounts regarding activities that are exported form operational systems (Cokins, 2009).

## 7. ECONOMIC VALUE ADDED

Economic Value Added – EVA is a method for company's financial performance measurement (ten Have, ten Have, & Stevens, 2003) (Hann, 2011). The concept conceived in New York consulting company Stern-Stewart, assesses economic profit of a company (Marr, 2012). Economic value added measures real economic profit instead of accounting profit, that is the level in which company earnings exceeds shareholder's and creditor's rate of return, with assumption of comparative risk (Hann, 2011). Economic value added measures real profit after deducting all capital expenditures (Hagos & Pal, 2010).

Economic Value Added is unique because it focuses on measuring value, as well as performance (ten Have, ten Have, & Stevens, 2003). It measures economic profit achieved during certain period and is equal to net operative profit after tax adjusted for the price of capital employed (Elliott & Elliott, 2006). It can be calculated using following formula:

*Economic value added =*
*Net operating profit after tax – Price of capital employed after tax x Average capital employed* (1)

It can be seen that economic value added measures economic profit, that is excess profit after deduction of earnings necessary for company to maintain capital and it indicates if company really created wealth. The

calculation uses net operating profit after tax (NOPAT) because it reflects profit available from operations, and not accounting profit. The other part of formula means that capital employed, which has its own price (weighted average cost of capital WACC (Marr, 2012)), should be seen as cost of maintaining capital that must be deducted in order to get economic profit (Hann, 2011). Positive economic value added means that during certain time period, value has been created  (Elliott & Elliott, 2006).

Economic value added measures economic profit that exceeds expectations of investors and represents performance indicator that, by removing accounting anomalies, enables direct comparison of companies with similar risk profile (Marr, 2012). Adjustment of net operating profit after tax is performed by modification of operating profit by capitalization of some costs that should be seen as assets in economic sense, such as leasing expenses, and than deducting real cash outflows (paid tax instead of calculated tax) (Hann, 2011). Also, when calculating economic value added, research and development and training costs are investments and should be treated in that way (Marr, 2012).

Economic value added is adequate indicator for setting goals, evaluation of performance, defining bonuses, communicating with investors, capital budgeting and valuation (ten Have, ten Have, & Stevens, 2003). It can be increased by (Hagos & Pal, 2010):
- Increasing revenues,
- Minimization of operating costs,
- Production of the same products and services using less capital,
- Investing only in productive projects,
- Decreasing costs of capital.

For adequate application of economic value added four main areas can be perceived: measuring, management, motivation and state of mind, as shown in Figure (ten Have, ten Have, & Stevens, 2003).
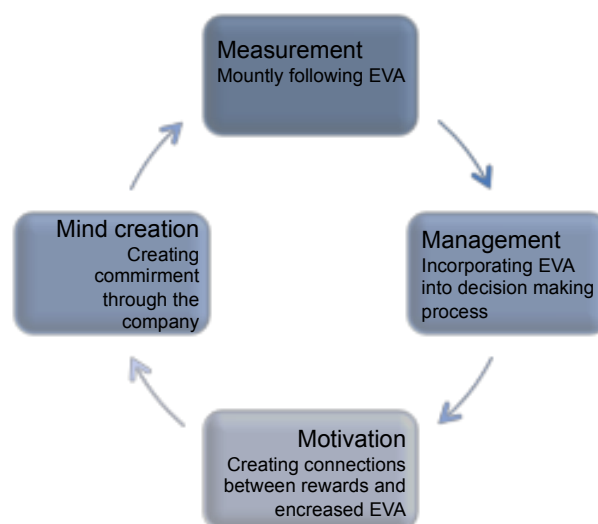


**Figure 8.** Key areas of EVA implementation (ten Have, ten Have, & Stevens, 2003)

The main challenge in use of economic value added is in calculation of real cost of capital, since that requires deciding about how many and which anomalies will be considered (there are over 150 of them) (ten Have, ten Have, & Stevens, 2003). Stern suggests that only the most important factors should be considered and use roughly defined cost of capital (Stern & Shiely, 2001).

The implementation of economic value added is more about cultural than financial change. Organizations must create culture where performance is more important than simply profit or loss (Marr, 2012).

## 8. CUSTOMER RELATION MANAGEMENT

Customers are more valuable for the company than the current sales amount. If a company can successfully identify the most valuable customers, gain them, keep them and increase its purchases, it will generate greater value than if all the customer were treated in the same way (ten Have, ten Have, & Stevens, 2003).

The key issue in customer relation management is to give to a customer perception that he or she is recognized and served immediately in a certain way through multiply integrated interface. This requires strategic management of all interactions with customers through marketing strategy customer led from outside to the inside, superior operations, systems and procedures that support customer interface and values and a customer focused culture (ten Have, ten Have, & Stevens, 2003).

Key or
big customers

Moderate, big or
regular customers

Small and occasional
customers

Hot potential customers

Potential customers

Eventual customers

Market segment

Market

The rest of the world

**Figure 9.** Customer managemet piramide (ten Have, ten Have, & Stevens, 2003)

When it is defined what the potentially most valuable customers are, the company should be following next steps (ten Have, ten Have, & Stevens, 2003):
▪ Gathering as mush as possible relevant information about (potential) customers.
▪ Analysis of information with redefinition of information needs over time.
▪ Setting goals regarding the way in company wants to be perceived as provider of products, services or experience.
▪ Selection of media, systems and content of communication and interaction with customers.
▪ Development of engagement rules and special service packages for each customer.
▪ Incorporation of a customer guided culture.
▪ Warehousing and analysis of data about customers.
▪ Development of customer management system through learning.

## 9. CONCLUSION

Performance management is not comprised of several unconnected parts that can be improved separately from one another (Hope & Player, 2012). Individually, these methodologies cannot provide complete solution for performance management needs. The integration with fundamental processes of performance management is necessary (Hagos & Pal, 2010). There is significant interdependence between numerous methodologies and systems for improvements and therefore, change in one area can influence performance elsewhere (Cokins, 2009). Performance management system is nor linear nor sequential process. It is dynamic process that evolves over time. In order for performance management to function, it is necessary to include all of its parts. If only one part is neglected, the system will not work (Bacal, 2012).

Cokins remarkably illustrates performance management framework by comparing it with gorgeous villa, called "Performance Management Villa" (Cokins, 2009) in which all chambers are equipped with strategic maps who establish the routes given from executive teem. In each chamber information and analytical tools are provided so that people can determine the way for accomplishing strategy. Balanced scorecard instrument tables for feedback exist in each chamber so that everyone knows how well his job is done. Villa has unique information platform. People are encouraged to make decisions quickly because there is less and less time for asking superiors for answers. In this way, managers do not manage villa, they enhance it.

## REFERENCES

Armstrong, M. (2009). Armstrong's Handbook of Performance Management: An Evidence-Based Guide to Delivering High Performance. London: Kogan Page Ltd.

Avis, J. (2009). CIMA official learning system, Paper P2, Performance management. Burlington, MA, USA: Elsevier.

Bacal, R. (2012). Manager's Guide to Performance Management. McGraw-Hill.

Bourne, M., Franco, M., & Wilkes, J. (2003). Corporate performance management. Measuring Business Excellence , 7 (3), 15-21.

Cokins, G. (2004). Performance Management: Finding the Missing Pieces (To Close the Intelliogence Gap). Hoboken, New Jersey: John Wiley & Sons, Inc.

Cokins, G. (2009). Performance Management: Integrating Strategy Execution, Methodologies, Risk, and Analytics. Hoboken, New Jersey: John Wiley & Sons, Inc.

Dagan, B. (2007, September). Dashboards and scorecards aid in performance management and monitoring. Natural Gas & Electricity , 23-27.

Dover, C. (2004, October). Dashboards can change your culture. Strategic Finance , 42-48.

Elliott, B., & Elliott, J. (2006). Financial Accounting, Reporting and Analysis. Harlow: Pearson Education Limited.

Hagos, T., & Pal, G. (2010). The means of analysis and evaluation for corporate performances. Annales Universitatis Apulensis Series Oeconomica , 438-449.

Hann, P. (2011, May 25). How EVA Relates to Financial Ratio Analysis. Retrieved July 16, 2012 from Bright Hub: http://www.brighthub.com/office/finance/articles/112839.aspx

Hope, J., & Player, S. (2012). Beyond Performance Management. Boston, Massachusetts: Harvard Business Review Press.

Horngren, C. T., Sundem, G. L., Stratton, W. O., Burgstahler, D., & Schatzberg, J. (2008). Introduction to Management Accounting. New York: Pearson, Prentice Hall.

Jones, P. (1999). The Performance Management Pocketbook. Alresford: Management Pocketbooks Ltd.

Kaplan, R. S., & Anderson, R. S. (2004, November). Time-Driven Activity-Based Costing. Harvard Business Review .

Kaplan, R. S., & Norton, D. P. (1992, January-February). The balanced scorecard: Measures that drive performance. Harvard Business Review , 71-79.

Kaplan, R. S., & Norton, D. P. (1996). The Balanced Scorecard: Translating Strategy into Action. Boston: Harvard Business School Press.

Kaplan, R. S., & Norton, D. P. (1996, January-February). Using the balanced scorecard as a strategic management system. Harvard Business Review , 75-85.

Leahy, T. (2003). The Balanced Scorecard Meets BPM. Business Finance (33).

Marr, B. (2012). Key Performance Indicators: The 75 measures every manager needs to know. Hampshire: Pearson Education Ltd.

Schiff, C. (2008, June). Three things you should know about dashboards. DM Review , 29.

ten Have, S., ten Have, W., & Stevens, F. (2003). Key management models: The management tools and practices that will improve your business. Harlow: Pearson Education Limited.

# APPLICATION OF THE BALANCED SCORECARD IN DEFENCE PERFORMANCE MANAGEMENT

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**Abstract:** *Performance management in defence is very important for the process of managing the defence and is fully integrated with all of its aspects. This paper presents a system of defence performance management, and it is based on the concept of Balanced Scorecard. The solutions presented in this paper are the authors vision as a possible solution for the continuous improvement of defence performance, in terms of dynamic changes. This paper may be useful for the development of military science, as well as practical solutions for management in public sector organizations.*

**Keywords**: defence system, performance, management, balanced scorecard, key indicators

## 1. INTRODUCTION

Contemporary public sector organizations, as well as private sector organizations, operate and achieve their activity in different political, economic, security, social, demographic and other conditions. Dynamic changes in these conditions raise new and complex demands to organization management. Results achieved in a short period of time become obsolete and unusable. Public sector organizations are faced with the problem of constantly increasing demands of stakeholders, as well as maintaining the quality of activities for general interest.

For defence system, as a specific public sector organization, an activity of general interest is the protection of the defence interests. In this regard, the defence system develops capabilities necessary to perform basic activities. That development processes are realized with a significant role of performance management.

Performance management in defence require a lot of information about the strengths, abilities, budget, organization, etc., which should be in balance. Based on that, it is necessary to create a system of performance evaluation which will be followed through different categories of indicators - perspectives. One of the useful tools to synthetically measure organizational performance is the Balanced Scorecard.

The concept of the Balanced Scorecard allows measuring of performance through multiply perspectives, management of organizational performance and presentation of balanced scorecard. It is applied in modern organizations, but also in some countries armed forces.

Armed forces are developing their own system for defence performance management that is based on the concept of Balanced Scorecard, with respect of defence specifics. Process of defence Balanced Scorecard development is consisted of strategy map drafting, measure of key performance indicators and present results of measurements.

## 2. PERFORMANCE MANAGEMENT IN THE DEFENCE SYSTEM

The defence system is a subsystem of the public sector whose mission is to protect the national security and national interests. Performance management is very important for developing of defence capabilities that are necessary for protection of national security and national interests.

Performance management in the defence system is a dynamic and iterative process. On figure 1 is shown an example of a cyclic model of defence performance management.
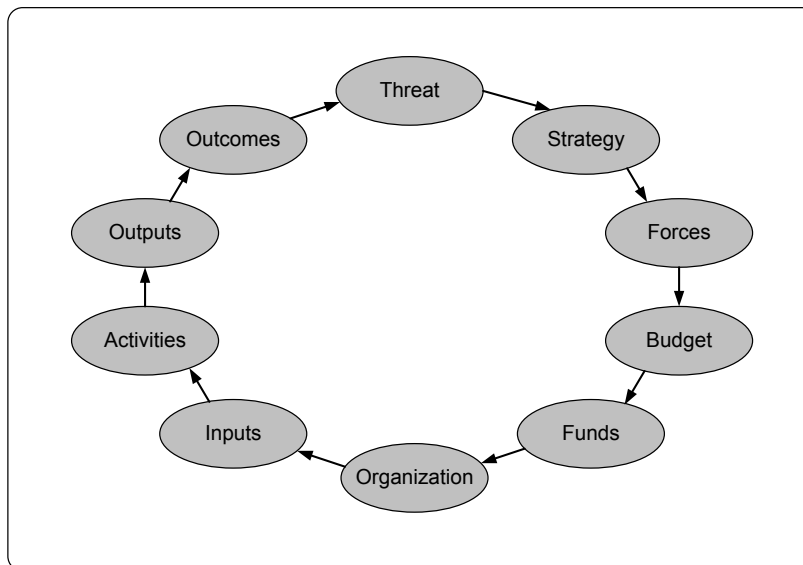
**Figure 1:** Model of defence performance management. (Angelis and Webb, 2009)

According to state security threats and based on an environment estimate, the government develops policy and strategy. In the next step the plan of the necessary forces development are prepared in order to implement policies and strategies. Also, it is necessary to provide adequate resources and prepare budgets for personnel, equipment, and other inputs needed to provide defence activities.

The approved budget is allocated through defence force structure and the costs types. Each defence organization provides specific inputs (staff, equipment, infrastructure, etc.) necessary to perform assigned missions and tasks. The output values are created as a result of combining inputs and activities.

Efficiency is the quality of being able to do a task successfully, without wasting reliable resources (time, money or energy). It is reflected in the ―inputs activities outputs" part of the model. Rather than focusing on budgeting processes, efficiency requires understanding the outputs. Efficiency answers the question, *are we doing things right*?

Effectiveness comes from the ―outputs to outcomes" part of the model. It describes how well the defence outputs performed relative to the strategies or high-level goals that the organization set out to achieve. Effectiveness also answers the question, *are we doing the right things*?

Outcomes are results, consequences, effects, or impacts of direct importance to stakeholders. Outcomes depend on the generated output and on the interaction of the output with the environment and the interpretation of stakeholders as to the success of that interaction. There are many measures, each with some utility for a particular audience and none fully measuring the „success" of the goal of providing national security (Stojkovic, Stojanovic, 2012).

It is obvious that defence performance management needs a lot of information about capabilities, budget, organization, et cetera. They must be in balance, because decisions making process based on only one type of information can have a negative impact on the defence system functioning, and probably here will be no success to provide national security and protection of national interests.

## 3. BALANCED SCORECARD CONCEPT

Modern organizations carry out their activities in changeable and complex conditions. Such conditions require a focus for continuous improvement of performance and implementation of strategic objectives. In this sense, many organizations devote considerable attention to performance measurement. In the process of performance measurement there are a lot of shortcomings. One of them is the foundation of the financial and material indicators.

However, such a method of measurement is not appropriate for modern organizations. In organizations there are intangible assets as employee knowledge, customer loyalty, innovative culture et cetera. The late twentieth century Kaplan and Davis Norton have created a new performance measurement system. The system, named Balanced Scorecard, is based on the performance measurement of the following perspectives: customers, internal business processes, learning and growth and financial (Figure 2).
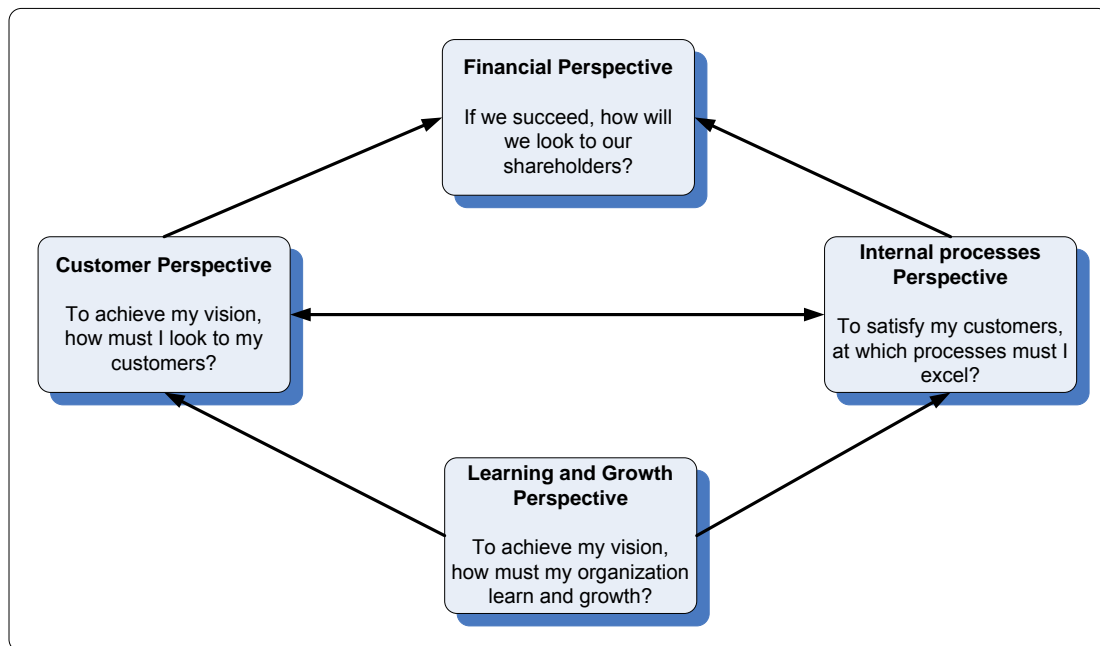
**Figure 2:** Perspectives of the Balanced Scorecard (Kaplan and Norton, 2001, adopted)

Essentially, the Balanced Scorecard can be viewed in three ways: communication tool, measurement system and strategic management system (Niven, 2008).

Stakeholders should to know what it needs to be done to implement the strategy. This allows the strategy map in complex conditions. The strategy map is a communication tool that shows the paths from the beginning to the end of implementation the strategy. It shows causal paths through perspectives and leads us to the implementation of strategy.

The strategy map is the basis for the development of measurement system. The Balanced Scorecard system allows an organization to translate its vision and strategies by providing a new framework — one that tells the story of the organizations strategy through the objectives of the strategy map and measures chosen to represent those objectives on the Balanced Scorecard. The strategy map and measurement system are inseparable.

The Balanced Scorecard evolved from the measurement system to the strategic management system. It harmonizes short-term activities and the strategy. The Balanced Scorecard overcomes the following obstacles: vision, people and resources. On figure 3 is shown a number of possible reasons for launching a Balanced Scorecard program.
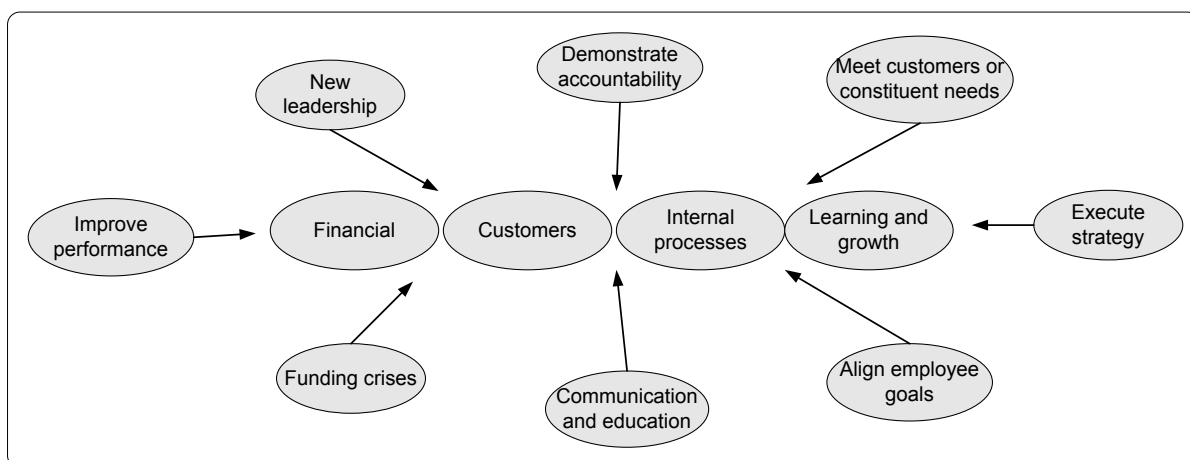


**Figure 3:** Arguments for BSC (Niven, 2008)

In order to realize real benefits from the Balanced Scorecard, organization should determine their specific justification for launching this implementation.

## 4. BALANCED SCORECARD IN DEFENCE SYSTEM

The Balanced Scorecard concept is used in modern organizations, but also in some armed forces. However, armed forces are developing their own performance management system based on the Balanced Scorecard concept, which were adopted and adjusted to the defence specifics.

The defence performance may be monitored through the following four perspectives:

- „Outcomes" provides information on the current fulfillment of tasks and the defence readiness comparing to the future challenges;
- „Resources" provides information about resources available to the defence;
- „Processes" provide information about the quality of the key processes in the defence and
- „Development" provides information about the possibility of continuous improvement and value creation of the defence.

Perspective determination and performance selection are realized in the process of defence strategy map developing (Figure 4). Due to the complexity of the defence as a system, the selection of performance is not easy. It is necessary to select the performance of which the realization of the vision and mission depends on, as well as the realization of long-term defence goals.



**Figure 4:** Defence strategy map

However, the functioning of the defence system does not depend on all performances equally. Some performances are more important, but some performances are less significant for the defence system. In this regard, in the defence system, weights for each performance within the perspectives are determined using expert choice method and software Expert Choice.

One of the main ways to obtain data on the quantity and quality of performance is their measurement. Performance measurement is the process of developing indicators for assessing specific goals and execution of measurement (Dictionary of Business and Management, Fourth edition 2006, Oxford, page 396).

There are dozens or hundreds of performance indicators to measure performance. However, it is necessary to select only the indicators that will show the real quantity and quality of performance. Performance indicators are directly related to defence objectives indicators.

The present method of measuring performance indicators allows simultaneous monitoring the implementation of the medium-term objectives and the defence performance.

Making defence strategy map and performance measure are complex processes. Due to the complexity of these processes the most expert people in the defence establishment must be engaged.

Based on the measurement results, identification of the performance shortcomings and the defence key problems are performed. The measurement results and the defence key problems are presented to the Ministry of Defence leadership, as well as proposed measures to eliminate shortcomings and resolve key issues.

In order to present the results of measurements defence dashboard are made, that graphically displays the current status and future trends of performances and perspectives (Figure 5).
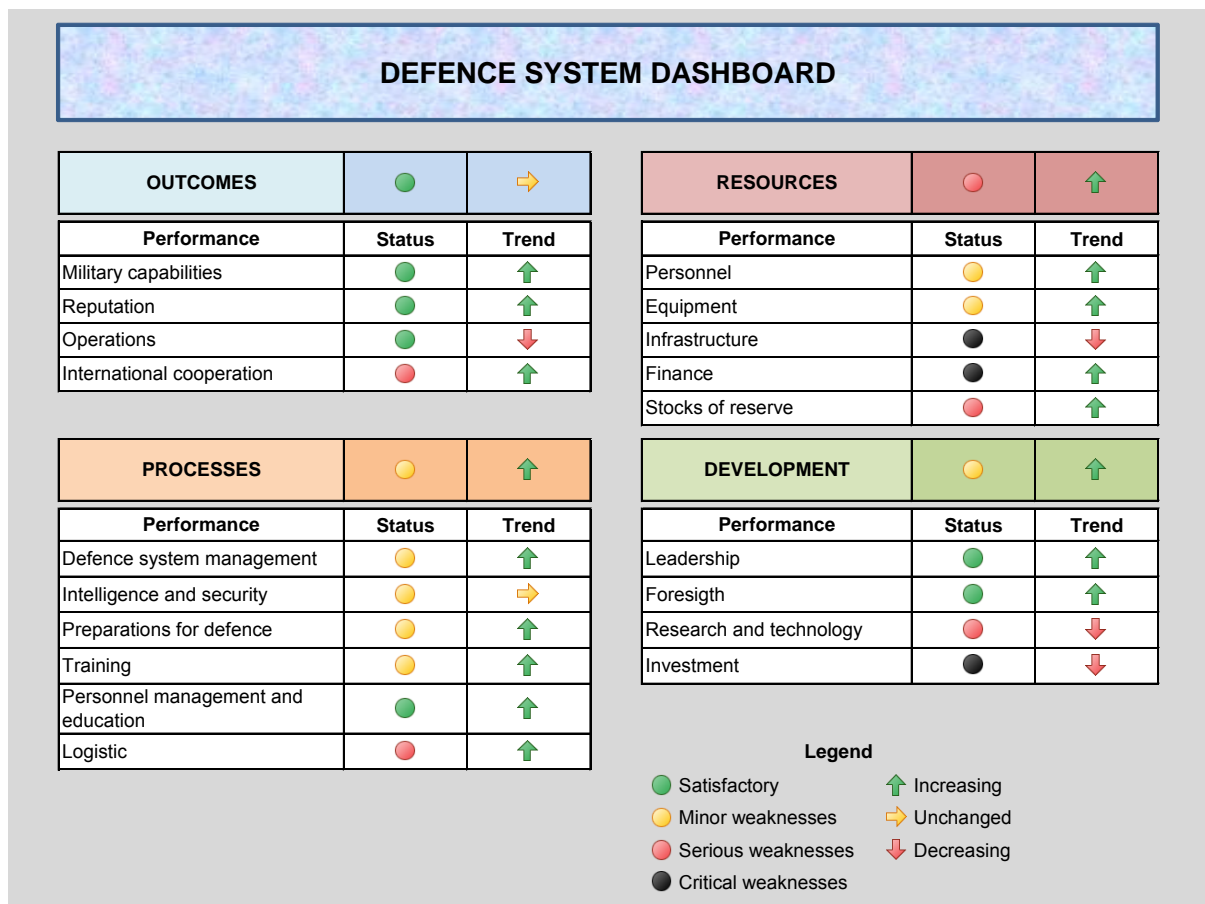


**Figure 5:** Defence system dashboard

Displaying the defence performance in such a way helps in understanding the entirety state of the defence, easily spotting key issues and quickly makes decisions about corrective action.

## 5. CONCLUSION

Performance management supports strategic planning in organizations using measurable indicators and better information enables managers to recognize success, identify problem areas and develop actions in order to provide better service to society.

The Balanced Scorecard concept enables to monitor organizational performance through more different categories of indicators. Defence performance management is based on the Balanced Scorecard concept with respect of the defence system specificities.

Appliance of the presented model of the defence performance management enables to achieve different effects:

- monitoring the performance necessary to achieve the defence system objectives;
- quick identification of key issues;
- simple and understandable presentation of the defence system state;
- defence planning based on objective indicators;
- corrective action.

The presented model may be applied in military organizations, as well as in public sector organizations. However, application of the presented model requires its adjustment in accordance the specification of the particular system.

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## REFERENCES

Angelis D., Webb N. (2009), Improving Performance Measurement in Defense Organizations, Armed Forces Comptroller, Downloads: http://www.omagdigital.com/publication/?i=42492

Angelis D. C. (2005), Controlling Strategy, Management, Accounting, and Performance Measurement, Oxford University Press.

Cokins G. (2004), Performance Management–finding the missing pieces (to close the intelligence gap), John Wiley & Sons, Inc.

Dube S., Danescu D. (2011), Supplemental Guidance: Public Sector Definition, The Institute of Internal Auditors, Altamonte Springs, Retrieved from https://na.theiia.org/standards-guidance/Public%20Documents/Public%20Sector%20Definition.pdf.

Kaplan, R. S. and D. P. Norton (2001), Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I, Accounting Horizons, March, pp. 87-104.

Mašić B (2009), Strategijski menadžment, University Singidunum.

Niven P. (2008), Balanced scorecard step-by-step for government and nonprofit agencies - 2nd edition, John Wiley & Sons, Inc.

Smith M. (2005), Performance Measurement and Management, Sage Publications.

Stojković D., Stojanović D. (2012), Strategic defence performance management, Proceedings SYMORG.

Taticchi P. (2010), Business Performance Measurement and Management, New Contexts, Themes and Challenges, Springer.

# ROLE OF TRANSFER PRICING IN BUSINESS OF MULTINATIONAL COMPANIES

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**Abstract:** *In recent times, the role of transfer pricing has become especially important in complex holding companies on an international level. Due to the trade between the parent company and subsidiaries located in different countries, the tax implications of transfer pricing is expressive. Therefore, the harmonization of relations between multinational companies and governments of some countries is becoming increasingly important issue. In this regard, the paper will discuss the role of transfer pricing in multinational companies, as well as their influence on the governments of the host countries. Bearing this in mind, the main objective of this paper consists in analyzing the importance of transfer pricing in order successfully manage the multinational companies performance. By adequate application of theoretical concepts and chosen research methods, the work is expected to extend domestic writings in this field and to introduce our economic publicity with the role of transfer pricing in the operations of multinational companies.*

**Key words**: *transfer pricing, multinational companies, tax implication*

## 1.INTRODUCTION

The last decade of the twentieth century was marked by increasing globalization and internalization of international business. In terms of trans-nationalization of most economies in the world, multinational companies have become the central organizers of economic activity and the main actors in shaping the international division of labor. They achieve this role through foreign direct investment, and a number of non-equity arrangements with the enterprises in the host country.

Transfer price is the cash basis for quantifying the internal transfer of products / services. It is determined for an adequate and fair determination of participation of each participant in this transfer and measurement of its effectiveness. The specificity of transfer pricing in relation to the external market price is reflected in the fact that they condition performance of the unit that buys and units that sells intermediate product / service, but also the company as a whole.

Transfer pricing has become one of the most important elements in the operations of multinational companies. Internal transfer is a potentially serious and complex economic phenomenon in relation to the external exchange of products / services, that is performed relatively without a problem due to the effects of market rules.

The role of transfer pricing in the creation of tax benefits for multinational companies became more pronounced. The ultimate effect of the tax consequences of the profit of multinational companies significantly exceed the effect of other factors, such as reduced risk of monetary disturbances, keeping the preferred dividend policy or achieve competitive advantage through finding cheap capital.

## 2. THE GROWING IMPORTANCE OF MULTINATIONAL COMPANIES IN THE WORLD ECONOMY

The term multinational corporation was first used in 1960. The term was apparently "coined by David E. Lilienthal, director of Tennessee Valley Authority under President Roosevelt and the Atomic Energy Commission during the Truman... His report at the Carnegie Institute of Technology from the 1960s, hich was then published in Development and Resources Corporation has a title: The Multinational Corporation. The title was then taken over by Business Week in a separate report of Multinational Companies in the issue of April 20 in 1963" (Svetličić, 1986). In fact, it seems that the multinational corporations occurred with the use of the term that indicate the feature which can by no means be considered new. However, "the features can not bear with the names they receive, but they form through a long process, filled with contradictions and struggles of various factors, which ultimately lead to the prevalence of certain characteristics. And this may be expressing something qualitatively new in relation to the old features or just be a new form" (Svetličić, 1986).

Multinational companies are very difficult to define, given that among them there are many differences observed in terms of form and concentration of ownership, the volume of capital and scope of operations, geographic dispersion of activities, degree of differentiation and integration, the structure of the internal organization and management system. The lack of a comprehensive definition of multinational companies is probably the result of applying a number of criteria that cannot be avoided during the time of their definition. With this in mind, the literature can meet various definitions of multinational companies.

Dunning defines a multinational company as a company that undertakes foreign direct investment (FDI) and owns or has the right of control over the activities of more than one country. According to this definition, a multinational company has two characteristics. First, they coordinate production between a numbers of different companies and internalize this coordination problem within a single organizational structure. Second, a significant part of economic transactions associated with this coordination activity is achieved outside of the national economy. According to these characteristics multinational companies are different than other companies. On the one hand, a large number of companies control and coordinate production between the various companies and while many other companies have taken economic transactions across borders. On the other hand, multinational companies are the only companies that coordinate and internalize their economic activities beyond the borders of the national economy.

Hood and Young point as important elements of the multinational companies following (Svetličić, 1986):
- direct investments (unlike previous portfolio investments),
- transmission resources in the package,
- property ownership abroad that bring income in various countries.

According to the management criteria, it is believed that a multinational company is that whose control central has a multinational character, i.e. the management of a given multinational companies (the leadership includes representatives of all branches of multinational companies) is multinational.

Numerous and different views of given phenomena suggest that comprehensive definition of multinational corporations must include the following elements: multinational corporations represent the major economic organizations that only part of its activities performed outside of the national economy and to this end establish affiliates abroad, their central administration is in the hands of citizens of the exporting capital country and ownership structure of the corporation may, but need not have a multinational character.

It must be recognized that difficulties in the precise definition of multinational companies, as the dominant actors in shaping global economic trends in the contemporary conditions, represent a reflection of their complexity and the fact that they are in fact "mixed formations, because on the one hand, they are a reflection of the competition, and on the other, negation of the competition, a reflection of the concentration and centralization of capital and state intervention. These companies are polyvalent, and national and transnational (multinational), and market and anti-market, they are factor of the development of the productive forces, but also the limiting factor of this development, they are a factor of the integration also and disintegration of the world market and the national economies" (Svetličić, 1986).

However, "in the broadest sense of the word multinational company we can be defined as a company that produces goods and sells its services in more than one country. In the strict sense of the word, multinational company can be defined as a company that, through foreign direct investments, controls and manages affiliates in foreign countries" (Held et al., 2001).

Specific features of multinational companies are reflected in the large geographical coverage, significant organizational interdependence and capabilities of coherent integration of activities implemented in different countries. In terms of revenues, profits, capital and resources, these companies represent the true giants, and their economic power is often greater than the potential and performance of many countries.

Their great power based on the enormous size and activities on a global scale, especially in the social influence that stems from it; internationalization of all phases of operations; centralization of decision-making; monopoly control of the world's raw materials and energy; as well as the great potential of scientific and technical development, including the ability to attract and engage a number of scientific staff from around the world. Thus, MNC's are still the most important factor in the world economy, which controls more than 70 % of world trade and 80% of the world's financial potential. The most dynamic sectors of the economy are broadly transnational and have an interest in maintaining an open international economic system. The expansion of MNC's has led to the growing integration of the world economy in which their business is increasingly limited by national boundaries, so that the factors of production and goods to move freely, which allows for the reproduction cycle of global capital freely fertilization.

It is characteristic that, for example, the Japanese company „Toyota" one-third of the total production generates from its 25 companies located in America, Europe and Asia. Exports about 45 % of its production realized in Japan. Through its regional network of Asian imports diesel engines from Thailand, the Philippines transformers, heaters, etc. from Malaysia. American company „IBM" in the field of information technology, 41 % of its sales realized in the North American market, 30 % in Europe and 9 % in Asia. „Canon" is realized 30 % of its production in North America, 29 % in Europe and 37 % in Asia. For companies that have a relatively small domestic market, such as the giant Dutch electronics industry „Philips" or Swiss food colossus of industry „something", it is crucial exit out of the national market and the expansion of its activities on the planet. For this reason, MNC's locate their center of activity everywhere that can realize the most effective combination of technology, capital and labor to produce the most profitable and launch their products. They are trying to infiltrate in the periphery of the world economy, the interest of the city to spatially decentralized production operations, seeking more profits and lower wages. As a consequence, the emergence of transnational unwieldy empire whose business scope often exceeds the gross national product of many countries.

On the basis of the content of MNC is a strategy that foreign investment is being made, rather than in the form of the loan capital in the form of capital and entrepreneurial business to be managed mainly from the country of origin of the company. Foreign direct investment in modern developmental stages functions as a key development factors and the international trade and technological progress have become the main mechanism for the global economy. Common modes of transmission activities of MNC's in other countries, in addition to FDI as the most important ways as: exports of goods, sales of licenses, portfolio investments, joint ventures, contractual arrangements and know-how. In such circumstances, the companies strive to become a global, primarily due to the inclusion in the global market of material goods and services, to oppose competition in the domestic market, hedging and cost per unit of product. In addition, the development of productive forces, as a result of the scientific and technical revolution, led to the fact that in some industries it is impossible to organize the production of which would be profitable, if it only works for the national market. To be effective, corporations seek to ensure good market position, increasingly insist on quality, technological innovation, with particular attention to attach a global strategy and development. In the struggle for dominance in the market, they are not shy to use various non-economic, even illegal activity, that they an effective and fast way to provide global dominance.

Power, available knowledge and accumulated experience of multinational companies are coming to full expression in situations where they use favorable conditions and comparative advantages offered by a specific geographical location and when they integrate these separate locations in the multinational network of research and development, production and sales, and marketing (Milićević, 2003).

In the circumstances of a complex organizational structure, instability of exchange rate movements and possible political upheaval in the host countries, companies has as tasks-coordination, control, resource allocation, performance measurement and currency management becomes more complex.

## 3. TRANSFER PRICING - A FORM OF MULTINATIONAL COMPANIES POWER EXPRESSION

Power of multinational companies is not expressed only through competitive advantages in a number of countries in the world. These companies have a significant influence on the government of the host countries. The power derives from their ability to influence the macroeconomic policies of local governments and set up rules to suit themselves. The most obvious example of the expression of this type can represent transfer prices.

As for the group at the international level, the transfer of goods and services between the parent company and subsidiaries is carried out by transfer pricing. Thus, for example, if the parent company that manufactures equipment and subsidiaries installes that equipment in another country, transfer pricing implies a level of profit and tax profit of parent company and subsidiaries. Established equipment transfer pricing imply in this case the cost of the branch of subsidiaries and at the same time the income of the parent. That is, regardless of how they are formed, transfer prices significantly affect the profitability of each entity within the complex group. Transfer prices affect the decision making process of the input and output. These decisions directly affect profits, rates of return on investment as well as on taxation in the case of complex organizations at the international level.

Transfers of products and services among subsidiaries that are located in different countries represent a very important segment of the multinationals. In support of this conclusion is the fact that internal transfers between subsidiaries account for between 30 and 50% of the total annual income of multinational companies. The prices at which these transfers take place based either on cost or estimated market prices

for the products or services that are subject to internal trade. In both cases, these prices are considered administrative or management cost, given that they do not provide the economic value of internal transfers. Accordingly, the transfer price can be a significant source of multinational companies' benefits as the central management successfully manages them (Radebaugh & Gray, 1997).

If transfer prices are implemented incorrectly, a company increases its exposure to double taxation, penalties, and high legal costs. This results in an increase in the total cost of ownership as a short term money saving decision may finally cause an overall higher cost. Thus, the increased total cost of ownership makes the corporation less profitable. Transfer pricing was found to be an important part of maximizing operating performance (Kumar & Sosnoski, 2011).

Transfer pricing at multinational groups level have multiple effects. They directly affect the amount of business results of the group members in the supply chain. For multinational companies with global supply chains, increased awareness of transfer pricing–related issues is leading to the acknowledgments that changes in an operational structure often demand appropriate changes to the tax and legal structure to align business models (Balachandran et al., 2010). This result has a different level of corporate taxation and taxation of distributed profit of group members in different countries. By the transfer pricing, profit is transferred from countries with high tax rates in countries with lower tax rates. They directly influence the increase in profits in countries with lower rates of income tax. On the other hand, transfer price may have a control part. Thus, or example, if the parent wants to receive dividends from its subsidiaries, which is not possible because of legal restrictions, then the parent will artificially increase their profits and reduce profit of subsidiaries.

Therefore, the main benefit, which could result in the effective management of transfer pricing is reflected in minimizing global tax liabilities, reducing the risk of monetary disturbances, maintaining desirable dividend policy, finding cheap capital, and the like. Tax consequences arising out of the utilization of different transfer prices can be easily quantified, and the final effects of the profit of multinational companies significantly beyond the effects of other factors. Transfer pricing is the movement of money from one country to another. Almost correctly, it can save a company millions of dollars, if not done accurately, transfer pricing can place global companies at considerable risk for audits, interest and penalties, even result in double or triple taxation (Tully, 2012).

Tax legislation and tax incentives vary from country to country and range of moves performed by multinational companies in order to achieve tax savings very large . In the period since 1980 till 1990 in the U.S. there was a big expansion of multinational companies whose asset value almost tripled and climbed up to the amount of 1.8 trillion dollars, while the amount of taxes paid in the same period hardly changed. Than 36,800 foreign companies, more than half did not report any taxable income. U.S. Treasury Department has estimated that 36 multinational companies in this period to avoid paying more than 100 billion dollars in taxes, of which two-thirds related to Japanese companies. Particularly outstanding was the example of Toyota, which was accused that by excessively high transfer prices of cars and parts in the U.S. carried out the transfer of profits in Japan, where tax rates were much lower. Later the company still paid the entire trillion dollar tax.

In order that such cases would not be repeated in the early 90s, many countries have begun to incorporate into their tax legislation the different ways of calculating of transfer pricing for multinational companies that do business with them. A large number of multinational companies in the world has imposed the need to address the problem of calculating transfer prices at the global level in what they include and organizations such as *The Organisation for Economic Co-operation and Development - OECD* and *United Nations - UN*, and the final solution was a principle "arm's - length transaction," which included the recognition of transfer prices, for internal deliveries between the parent company and the foreign subsidiary, on level comparable prices applicable to unrelated entities. This means that the tax base includes the difference between this particular transfer pricing and internal established transfer prices. When transfer prices do not reflect market relations and the arm's-length principle, can lead to distortion in terms of tax liabilities of related entities and the tax revenues of the host countries. Therefore, the profit of related entities can be corrected to the extent necessary to correct such distortions and ensure the application of the principle of arm's length. OECD member countries are considered that appropriate alignment is achieved by establishing requirements for commercial and financial relations between unrelated entities in comparable transactions under comparable conditions (OECD Guidelines, 2010).

Although this approach limits the possiblility for transfer prices manipulation, it is difficult to apply. The problem is that the transfer prices are essentially administrative cost, and used for evaluation of internal financial flows that cannot be traced through the flow of goods or services. Even in situations where the primary cost of unfinished products can be accurately defined, there is always the opportunity to "discover" a

new service whose cost accounting system recognizes. Thus, expenditures on behalf of mutual advisory services, insurance services, general management, research and development, phone calls, loans, and others, can still be included in the calculation as costs by choice. Moreover, in many countries a firm's legal structure and ownership structure define respective accounting requirements. For instance, disclosure requirements may vary with factors such as size, number of owners, liability regimes, and so forth (Martini et al., 2012).

Multinational companies have the ability to easily and quickly reallocate their profits, and that the governments of the countries puts at a disadvantage. By threat of closure of their factory, and thus by the loss of jobs for many people, by a bad image of the host country to other investors as well as by weakening of political support for elected governments of these countries by the local population, multinational companies are pressuring the government policies of host countries.

For these reasons, many countries are introducing benign procedure for the control of transfer pricing of multinational companies. In order to keep or attract large companies, they offer a number of tax benefits, benefits in the area of production, such as cheap or free land for the construction of production facilities, subsidies and financial assistance in times of crisis in order to maintain or increase employment.

## 4.CONCLUSION

Multinational companies provide a powerful process of international integration and the emergence of the global economy, whose essence is the realization of national interests and economic expansion, primarily to home countries. Power, available knowledge and accumulated experience of multinational companies are coming to full expression in situations where they use favorable conditions and comparative advantages offered by a specific geographical location and when integrate these separate locations in the multinational network of research and development, production and sales, and marketing.

Transfer prices are an important instrument for planning and controlling of business performance at the level of multinational companies. The effect of transfer pricing is best seen in terms of a high degree of independence of the organizational units of businesses. Recently, by transfer pricing profits is transferred from countries with higher tax rates in countries with lower tax rates. Law in developed countries successfully discover such an effect of transfer pricing at the level of individual complex groups and, therefore, possess adequate tax regulations.

Financial flows and income distribution of multinationals must be controlled by the governments of the host countries. On the other hand, starting with the economic and political power of multinational companies, local governments must sometimes directly intervene by way of tax incentives or through benefits in production.

We conclude that the alignment of the relationship between multinationals and the governments of certain countries is associated with the distribution of wealth and the control of production. This relationship is much more than a successful creation of tax legislation.

## REFERENCES

Balachandran, K., Li, S. & Wang, T. (2010). The Role of Transfer-Pricing Schemes in Coordinated Supply Chains. Journal of accounting, auditing & finance 25(july), 375-404.

Held, D., McGrew, A., Goldblat D. & Perraton. J. (2001). Global Transformations: Politics, Economics and Culture. Cambridge, UK: Polity Press.

http://unctad.org/Sections/dite_dir/docs/WIR2013/WIR13_webtab28.xls (15.03.2014).

Kumar, S. & Sosnoski, M. (2011). Decision framework for the analysis and selection of appropriate transfer pricing for a resilient global SME manufacturing operation – a business case. International Journal of Production Research, 49(18), 5431–5448. DOI: 10.1080/00207543.2011.563835.

Martini, J., Niemann, R. & Simons, D. (2012). Transfer Pricing or Formula Apportionment? Tax-Induced Distortions of Multinationals' Investment and Production Decisions. Contemporary Accounting Research, 29(4), 1060–1086. doi:10.1111/j.1911-3846.2012.01140.x.

Milićević, V. (2003). Strategijsko upravljačko računovodstvo. Beograd: Ekonomski fakultet.

Radebaugh, L. & Gray, S. (1997). International Accounting And Multinational Enterprises, New York: John Wiley.

Smernice OECD za primenu pravila o transfernim cenama za multinacionalna preduzeća i poreske uprave. (2010). Retrieved from http://www.stats.govt.nz

Svetličić, M. (1986). Zlatne niti transnacionalnih preduzeća. Beograd: Ekonomika.

Tully, B. (2012). Transfer Pricing Strategies and the Impact on Organizations. FinancialExecutive (july/august), 34-37.Retrieved from www.financialexecutives.org.

# TOWARDS A FRAMEWORK FOR ENHANCING R&D INDICATORS OF OECD COUNTRIES

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**Abstract:** *Expenditure on research and development (R&D) is one of the most widely used measures of innovation inputs. Governments in modern economies devote much attention to enhancing productivity and emphasizing its drivers such as investment in R&D. So far, there are no existing frameworks that perform ranking based on R&D. The aim of our paper is to present an I-distance methodology that gives a new perspective on the measurement of R&D. In addition, we aim to compare it to the list of the OECD countries by R&D expenditure, and to point out improvements that our methodology provides. As a case study we analyzed a dataset of 41 OECD countries, with the latest available data of 2013. One of the contributions lies in the application of an I-distance method which can easily integrate R&D variables with different measurement units into one composite indicator. Using the I-distance method, the obtained results suggest that following indicators are very significant for ranking countries: GERD as a percentage of GDP, Business Enterprise Expenditure on R&D as a percentage of GDP, Percentage of GERD financed by industry and GERD per capita population. In addition, applying the I-distance method we were able to overcome the problems concerning the aggregation of composite indicator that uses presumably biased weighting factors. Moreover, our approach could be a foundation for an appropriate framework of R&D ranking countries which would be unbiased i.e. independent from subjectively formed weighting factors.*

**Keywords**: *research and development (R&D), I-distance method, ranking of countries, OECD countries*

## 1. INTRODUCTION

As a branch of economics that focuses on improving the economies of developing countries, development economics considers how to promote economic growth in such countries by improving factors like health, education, working conditions, domestic and international policies and market conditions (Cracolici et al.2010) It examines both macroeconomic and microeconomic factors relating to the structure of a developing economy and how that economy can create effective domestic and international growth. It seeks to determine how poor countries can be transformed into prosperous ones (UNDP 2008). Strategies for transforming a developing economy tend to be unique, because the social and political background of countries can vary dramatically (Petrosillo et al.2013). Today, more than ever before, innovation, enterprise and intellectual assets drive economic growth and increase standards of living (D'Acci 2011). Innovation is instrumental in creating new jobs, providing higher incomes, offering investment opportunities, solving social problems, curing disease, safeguarding the environment, and protecting our security. To help achieve these objectives, governments must create appropriate incentives for continued growth in innovation and technology development and embrace sound policies for assuring broad social diffusion and access to key scientific and technological advances that enable us, as Newton first observed, *to stand on the shoulders of geniuses*" (Business and Industry Advisory Committee to the OECD, CREATIVITY, INNOVATION AND ECONOMIC GROWTH IN THE 21st CENTURY).

It is not uncommon that the countries refer to the best rank in one criterion, while the other criteria (which are also important) are below average. In order to enhance and improve ranking and conclusion we focused on the application of the composite index (Amdt et al.2013; Guttorp and Kim 2013; Saisana et al.2011 ). Composite indicators as tools to compare country performance are increasingly common (Saisana and Tarantola 2002; Saisana and D'Hombres 2008). Simplistically a composite indicator synthesizes the information included in a selected set of indicators and variables (Paruolo et al.2013) The output of a composite indicator is a set of scores indicating the relative performance of a country within a set of countries (Brügermann and Patil 2011). A composite is thus a measure of similarity (Saltelli 2007; Paruolo et al.2013). The main virtue of composite indicators is their usefulness for policy analysis in that they can summarise complex and sometimes elusive issues in wide ranging fields, e.g., environment, economy, society or technological development. Composites often seem easier to interpret than finding a common trend in many separate indicators and have proven useful in benchmarking country performance.

There are many problems we experience when applying composite indicators (Diener and Suh 1997;Moffat 2000).  Some of them are: imputation of missing data, multivariate analysis, normalization, weighting and aggregation, uncertainty and sensitivity analysis. For each of them methods how to overcome it (Dobbie and Dail 2012; Soo 2013;Tarantola and Saltelli 2007) are applicable. We will explain those three we find most important for this work. First problem is with data selection and missing data - the most common problem at all. Indicators should be selected on the basis of their analytical soundness, measurability, country coverage, relevance to the phenomenon being measured and relationship to each other. The use of proxy variables should be considered when data are scarce. Imputation of missing data is needed in order to provide a complete dataset (e.g. by means of single or multiple imputation). Consideration should be given to different approaches for imputing missing values (Handbook on constructing composite indicators: methodology and user guide). For example extreme values should be examined as they can become unintended benchmarks. Multivariate analysis is an exploratory analysis which should investigate the overall structure of the indicators, assess the suitability of the data set and explain the methodological choices, e.g. weighting, aggregation. Another most common problem with getting one dimensional variable by observing more dimensions is normalization. Normalization should be carried out to render the variables comparables well as indicators. Attention needs to be paid to extreme values and skewed data, because they may influence subsequent steps in the process of building a composite indicator.

The aim of our paper is to present an I-distance methodology that holds a new perspective on the measurement of R&D. In addition, we aim to compare it to the list of OECD countries by Expenditure on R&D (% of GDP) available from the World Bank data, and to point out improvements that our methodology provides. We will try to discuss several topics. We will incorporate expenditure R&D indicators into the evaluation framework of countries (OECD Factbook 2013). A simple definition of R&D intensity is *"the ratio of expenditures by a firm on research and development to the firm's sales".* Generally speaking, R&D is the main driver of innovation, and R&D expenditure and intensity are two of the key indicators used to monitor resources devoted to science and technology worldwide (Economic Glossary). R&D intensity for a country is defined as the R&D expenditure as a percentage of Gross Domestic Product (GDP) (Eurostat). The main aggregate used for international comparisons is gross domestic expenditure on R&D (GERD). This consists of the total expenditure (current and capital) on R&D carried out by all resident companies, research institutes, university and government labour ( OECD Factbook 2013 ). The GERD is an indicator of science and technology (S&T) activities; it is appropriately used as a summary of R&D activities and the basic flow of funds ( Griffith, R., Huergo, E., Mairesse, J., P, B., : Innovation and productivity across four European countries ).

The aim of this work is to provide a framework for introducing the necessity of evaluating countries by composite indicators. Our paper will employ a statistical I-distance method which can easily overcome the problem of subjectively chosen weighting factors. In addition, it can integrate variables with different measurement units into one value which is thereafter considered as a rank of a certain country. Besides the analyze of  influence of each one indicator , we will compare the results of I-distance method with other method and we were able to provide detailed data on how each observed indicator contributes to the final rank and point out the crucial indicators of countries. In addition, we compared ranks obtained by I-distance method with ranks based on the Expenditure R&D (% of GDP).

## 2. METHODOLOGY

The common case with different ranking methods is that their bias and subjectivity can affect the measurements and evaluation to a great extent. This problem can be somewhat overcome by the use of the I-distance method, a metric distance in an n-dimensional space, which has recently made a significant breakthrough ( Jeremic et al. 2011a; Radojicic and Jeremic 2012; Jeremic et al. 2012; Dobrota et al. 2012). It was originally defined by Ivanovic (Ivanovic 1977), who devised this method to rank countries according to their level of development based on several indicators, where the main issue was how to use all of them in order to calculate a single synthetic indicator, which will afterwards represent the rank.

For a selected set of variables $X^T = X_1, X_2, ...X_k$ chosen to characterize the entities, the I-distance

between the two entities and $e_r = x_{1r}, x_{2r}, ...x_{kr}$ and $e_s = x_{1s}, x_{2s}, ...x_{ks}$ is defined as

$$D(r,s) = \sum_{i=1}^{k} \frac{|d_i \ r,s \ |}{\sigma_i} \prod_{j=1}^{i-1} 1 - r_{ji.12...j-1}$$

(1)

where $d_i(r,s)$ is the distance between the values of variable $X_i$ for $e_r$ and $e_s$, e.g. the discriminate effect,

$$d_i(r,s) = x_{ir} - x_{is} \quad i \in \{1, \dots k\} \tag{2}$$

$\sigma_i$ the standard deviation of $X_i$, and $r_{ji.12\dots j-1}$ is a partial coefficient of the correlation between $X_i$ and $X_j$, $j < i$ (Radojicic et al. 2012; Jeremic et al. 2013).

To overcome the problem of negative coefficient of partial correlation, which can occur when it is not possible to achieve the same direction of variables, it is suitable to use the square I-distance (Jeremic et al. 2011b). It is given as:

$$D^2(r,s) = \sum_{i=1}^{k} \frac{d_i^2(r,s)}{\sigma_i^2} \prod_{j=1}^{i-1} \left(1 - r_{ji.12\dots j-1}^2\right) \tag{3}$$

The I-distance measurement is based on calculating the mutual distances between the entities being processed, whereupon they are compared to one another so as to create a rank (Seke et al. 2013). It is necessary to fix one entity as a reference in the observed set using the I-distance methodology. The ranking of entities in the set is based on the calculated distance from the referent entity (Jovanovic et al. 2012).

## 3. ANALYSYS – CASE STUDY

The results of the I-distance method, as well as a comparison of the I-distance and the Expenditure R&D (% of GDP) ranking, are presented in Table 1. A total of 41 countries have been included in the analysis. As can be seen from Table 1, Korea, Japan and Switzerland are the countries that top the I-distance method list. Korea, which comes in first for the I-distance method, takes third place in the Expenditure R&D rank, and, while Israel tops the Expenditure R&D rank, it takes eighth place in the I-distance rankings. A very interesting finding is that several countries show major oscillations in ranks methods, far more than other countries.

**Table 1:** $I^2$-distance rank, Expenditure R&D rank and Rank change

| Country | $I^2$-distance | Rank $I^2$-Distance | Expenditure R&D (% of GDP) | Rank Expenditure R&D | Change |
|---|---|---|---|---|---|
| Korea | 31,986 | 1 | 3,74 | 3 | -2 |
| Japan | 29,848 | 2 | 3,36 | 6 | -4 |
| Switzerland | 26,621 | 3 | 3,37 | 4 | -1 |
| United States | 25,419 | 4 | 2,77 | 10 | -6 |
| Finland | 25,309 | 5 | 3,78 | 2 | 3 |
| Denmark | 23,513 | 6 | 3,09 | 7 | -1 |
| Sweden | 23,318 | 7 | 3,37 | 5 | 2 |
| Israel | 22,704 | 8 | 4,39 | 1 | 7 |
| Chinese Taipei | 19,486 | 9 | 1,84 | 19 | -10 |
| . | . | . | . | . | . |
| . | . | . | . | . | . |
| . | . | . | . | . | . |
| Russia | 1,654 | 39 | 1,12 | 33 | 6 |
| Romania | 1,562 | 40 | 0,48 | 39 | 1 |
| Mexico | 1,529 | 41 | 0,46 | 40 | 1 |

For the past six years, the R&D funding for the top ten countries have remained mostly the same. There has been dramatic change however, in the extent of globalization involved in research, as well as shifts in the way funds are spent. While 2013 R&D investment growth was minimal in the U.S. and Europe, growth in most Asian countries, especially China continued. Asian R&D investment growth rates are expected to return to their pre 2013 levels in 2014 and 2015. The exception to this outlook may be Japan, which is more correlated with trends in the U.S. and Europe than with neighbouring Asian countries (Grueber and Studt 2013). Thus, implementing this concept in the I-distance framework is of great significance, because the results confirmed this order and such predictions.

As has been previously implied, one of the main objectives this paper is to present the relevance of R&D indicators. Namely, the I-distance method uses ten indicators and places them into a specific order of importance. This allows for a better understanding of the ranking results of the I-distance method, as well as for a better comprehension of the differences between the I-distance and Expenditure R&D ranking. In that, it is essential to establish an order of importance for the indicators since it provides an answer to the question: ─What *are the variables that are the most relevant for measuring the R&D level of countries?''* Accordingly, a Pearson correlation coefficient of each variable with the I-distance value has been calculated as to determine the significance of input variables. These correlations are presented in Table 2.

**Table 2:** Variable importance as measured by correlation with I-distance

| Variables | Correlation with I-distance |
|---|---|
| GERD as a percentage of GDP | 0,869 |
| Business Enterprise Expenditure on R&D (BERD) as a percentage of GDP | 0,828 |
| GERD per capita population (current PPP $) | 0,712 |
| Percentage of GERD financed by industry | 0,588 |
| Basic research expenditure as a percentage of GDP | 0,536 |
| Total researchers per thousand total employment | 0,480 |
| Total R&D personnel per thousand total employment | 0,466 |
| Higher Education Expenditure on R&D (HERD) as a percentage of GDP | 0,398 |
| Number of patent applications to the PCT (priority year) | 0,254 |
| Higher Education researchers as a percentage of national total | 0,168 |

The results show that the first three variables are significantly correlated to the I-distance measurement values. According to the results of our research, the most significant variable for determining R&D level appears to be *GERD as a percentage of GDP*, where r =0,869, p<0,001. Very high relevant positions are taken by the three important variables: *GERD as a percentage of GDP, Business Enterprise Expenditure on R&D (BERD) as a percentage of GDP, GERD per capita population*. It is essential for lower-ranked countries to improve these most significant R&D indicators in order to improve their overall position in the ranking process.

The most important indicator in composite index, which is used to enhancing R&D indicators of OECD countries, is *GERD as a percentage of GDP*, with $r^2$=0,869 (p<0,01). In addition, *Business Enterprise Expenditure on R&D (BERD) as a percentage of GDP* have an almost identical contribution to the composite index, with $r^2$=0,828 (p<0,01). It should also be noted that *GERD per capita population (current PPP $)* plays a significant role in composite index, with $r^2$= 0,712 (p<0,01) ([Isljamovic et al.2013]).

**Table 3:** Overview of the most significant R&D indicators for the top 4 high placed countries and other 4 with the highest change in rank

| Country | GERD as a percentage of GDP | BERD as a percentage of GDP | GERD per capita population |
|---|---|---|---|
| Korea | 4,36 | 3,09 | 1307,77 |
| Japan | 3,34 | 2,61 | 1190,44 |
| Switzerland | 2,87 | 2,17 | 1364,96 |
| United States | 2,79 | 1,95 | 1443,13 |
| Israel | 4,20 | 3,54 | 1231,44 |
| Chinese Taipei | 3,07 | 2,28 | 1178,06 |
| Russia | 1,12 | 0,65 | 264,61 |
| Slovakia | 0,82 | 0,34 | 212,77 |

Table 3. presents the results of the three most significant indicators for the first four countries and those that have had the greatest change in rank respectively. We have previously seen that in the first place is situated Korea. Progress of two positions is explained by the fact that Korea has the best results for the three most important variables which leads to the first place in the I-distance ranking. Second place belongs to Japan. By achieving 2,61% *BERD as a percentage of GDP*, as one of the key indicators, Japan has progressed for

four places. As Japan is one of the leading economic powers, this result is not so surprising. Good results by all indicators, without major oscillations bring Switzerland in third place. This represents an improvement of one position. A very interesting progress from ten to fourth place achieved United States. Although there is an average *BERD as a percentage of GDP* for that position, what stands out and leads to a high position is the most accomplished *GERD per capita population* of 1443,13. In I-distance ranking Korea, Switzerland and Finland have kept a place in the top five countries. The most significant decline was recorded by Israel, having fallen from first to eighth position. Although it has good results in key indicators, very bad *Percentage of GERD financed by industry* has proven to be crucial stumbling point. By observing the poor ranking of countries, we noticed two great progresses of China and Slovakia for nine and ten position respectively. As you can see in the table 3, the reason for this rise of Chinese Taipei is located in very good results in all major indicators, while other indicators have larger oscillations. From all observed, we concluded that the use of I-distance method realized a more reliable ranking, since including far more R&D indicators than previous methodologies This has helped to clear up image, which countries such as Chinese Taipei and Slovakia have taken a much greater position than they previously had. We have noted that in addition to Finland, Switzerland and Korea which took the top five countries, have found also Japan and United States, although they had previously significant the lower positions. All other countries have had a slight change in the ranks.
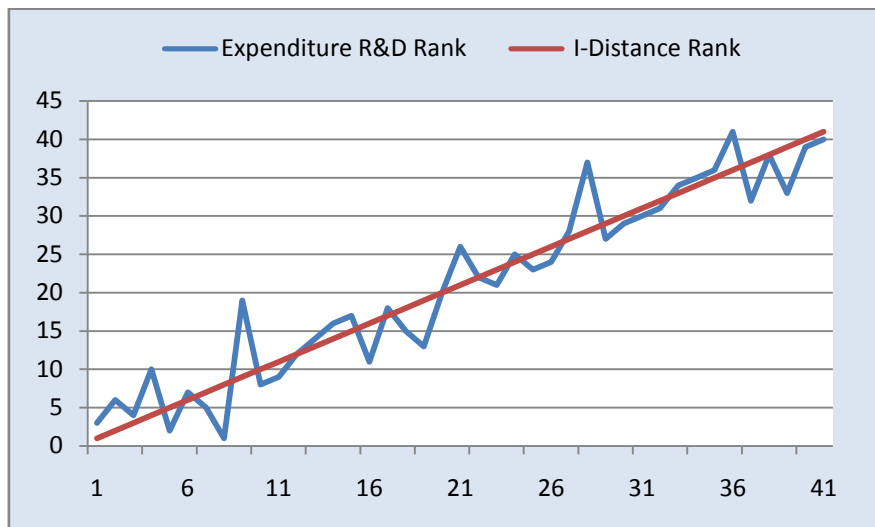


**Figure 1:** I-distance ranks and Expenditure R&D ranks

What we can see on the Figure 1. is the existence of several peaks, which are located below the red line, representing I-distance rank. These peaks represent Expenditure R&D rank, regarding a decline in the number of ranking positions to the I-distance rank. With the other hand we have two peaks one at the beginning which is a ascent Chinese Taipei from the 19th to the 9th position and another Slovak Republic from 37th to 28th position. However, the chart provides a better look at the relationship I-distance rank and Expenditure R&D rank.

## 4. CONCLUSION

Broadly speaking, innovation has become foundation for human progress. In today's world, ~~We~~ owe our existence to innovation. We owe our prosperity to innovation… We owe our future to innovation… Innovation isn't a fad—it's the real deal, the only deal. Our future no less than our past depends on innovation." (Hamel 2012)

So, a common indicator used to measure R&D investments across countries is represented by GERD: Gross Domestic Expenditures on Research and Development as a percentage of Gross Domestic Product (GDP) (R. Griffith, E. Huergo, J. Mairesse, B. Peters 2006). In this paper we have also showed the other crucial indicators for the relevant findings. False, incomplete or vague information causes confusion and mistaken investment decisions. If the governments want to improve the country rank, they need to invest in crucial variables.

Since the integration of R&D indicators into general development is an obvious necessity, we proposed the I-distance framework for evaluating and potentially enhancing R&D indicators of OECD countries. Our results emphasized the importance of Expenditure on R&D by incorporating the *GERD as a percentage of GDP*, *Business Enterprise Expenditure on R&D (BERD) as a percentage of GDP* and *GERD per capita population*.

Precisely those variables proved to be essential part of the I-distance framework for enhancing R&D indicators.

In I-distance ranking Korea, Switzerland and Finland have kept a place in the top five countries. As previously mentioned, while 2013 R&D investment growth was minimal in the U.S. and Europe, growth in most Asian countries, especially China, continued. The exception to this outlook may be Japan, which is more correlated with trends in the U.S. and Europe. Thus, implementing this concept in the I-distance framework is of great significance, because the results confirmed this order and such predictions. In addition to Finland, Switzerland and Korea which took the top five countries, have found Japan and United States, although they had previously significant the lower positions, which also shows the quality of our model.

In order to create a real, objective index of R&D indicators, we use the I-distance method which can easily integrate variables with different measurement units into one composite indicator. Moreover, our approach could be a foundation for an appropriate framework for evaluation and enhancing R&D indicators which might be in every way independent from subjectively formed weighting factors. We would also like to point out that the I-distance method proved to be quite useful in the first phases of research and that it emphasized important variables and provided us with the foundations for further elaboration of R&D indicators.

## REFERENCES

"About.com Economics Glossary". Retrieved 27 Apr 2013

Arndt, S., Acion, L., Caspers, K., Blood, P.: How reliable are county and regional health rankings?. Prev. Sci. 14(5), 497–502 (2013). doi:10.1007/s11121-012-0320-3

Brüggemann, R., Patil, G.P.: Ranking and Prioritization for Multi-indicator Systems. Springer, Dordrecht (2011)

Business and Industry Advisory Committee to the OECD, CREATIVITY, INNOVATION AND ECONOMIC GROWTH IN THE 21st CENTURY

Cahuc, P., Carcillo, S., Rinne, U., Zimmermann, K.F.: Youth unemployment in old Europe: the polar cases of France and Germany. IZA J. Eur. Stud. 2(1), 18 (2013). doi:10.1186/2193-9012-2-18

Cameron, A.J. van Stralen,M.M., Kunst, A.E. te Velde, S.J., van Lenthe, F.J., Salmon, J.O., Brug, J.:Macroenvironmental factors including GDP per capita and physical activity in Europe.Med. Sci. Sports Exerc. 45(2), 278–285 (2013). doi:10.1249/MSS.0b013e31826e69f0

Campbell, N., Saha, S.: Corruption, democracy and Asia-Pacific countries. J.Asia PacificEcon. 18(2), 290–303 (2013). doi:10.1080/13547860.2013.778156

Campisi, D., de Nicola, A., Farhadi, M., Mancuso, P.: Discovering the impact of ICT, FDI and human capital on GDP: a cross-sectional analysis. Int. J. Eng. Bus. Manag. 5, 46 (2013). doi:10.5772/56922

Chew, H.E., Ilavarasan, P.V., Levy,M.R.: The Economic Impact of information and communication technologies (ICTs) on microenterprises in the context of development. EJISDC 44(4), 1–19 (2010)

Costanza, R., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K.E., Ragnarsdóttir, K.V., Roberts, D., De Vogli, R., Wilkinson, R.: Time to leave GDP behind. Nature 505, 283–285 (2014)

Cracolici, M.F., Cuffaro, M., Nijkamp, P.: The measurement of economic, social and environmental performance of countries: a novel approach. Soc. Indic. Res. 95(2), 339–356 (2010)

D'Acci, L.: Measuring well-being and progress. Soc. Indic. Res. 104(1), 47–65 (2011)

Diebolt, C.,Mishra, T., Ouattara, B., Parhi,M.: Democracy and economic growth in an interdependent world. Rev. Int. Econ. 21(4), 733–749 (2013). doi:10.1111/roie.12067

Diener, E., Suh, E.: Measuring quality of life: economic, social and subjective indicators. Soc. Indic. Res. 40, 189–216 (1997)

Dobbie, M.J., Dail, D.: Robustness and sensitivity of weighting and aggregation in constructing composite indices. Ecol. Indic. 29, 270–277 (2012)

Dobrota, M., Jeremic, V., Markovic, A.: A new perspective on the ICT development index. Info. Dev. 28(4), 271–280 (2012)

Farhadi, M., Salehi, H., Embi,M.A., Fooladi, M., Farhadi, H., Chadegani, A.A., Ebrahim, N.A.: Contribution of information and communication technology (ICT) in country's H-index. J. Theor. Appl. Info. Tech. 57(1), 122–127 (2013)

"Glossary:R & D intensity". Eurostat. Retrieved 13 December 2013.

Griffith, R., Huergo, E., Mairesse, J., P, B., : Innovation and productivity across four European countries, OXFORD REVIEW OF ECONOMIC POLICY, DOI: 10.1093/oxrep/grj028

Griffith, R., Huergo, E., Mairesse, J., P, B., : Innovation and productivity across four European countries, OXFORD REVIEW OF ECONOMIC POLICY, DOI: 10.1093/oxrep/grj028

Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces

Grueber, M., Studt, T.,: 2014 GLOBAL R&D FUNDING FORECAST, R&D Magazine, December 2013

Guttorp, P., Kim, T.Y.: Uncertainty in ranking the hottest years of US surface temperatures. J. Climate 26(17)6323–6328 (2013). doi:10.1175/JCLI-D-12-00760.1

Handbook on constructing composite indicators: methodology and user guide – isbn 978-92-64-04345-9 - © OECD 2008

Hamel Gary: What Matters Now: How to Win in a World of Relentless Change, Ferocious Competition, and Unstoppable Innovation, John Wiley & Sons, 2012

Hauner, D., Kyobe, A.: Determinants of government efficiency.World Dev. 38(11), 1527–1542 (2010). doi:10.5755/j01.ee.23.2.1546

Huarng, K.H.: A comparative study to classify ICT developments by economies. J. Bus. Res. 64(11), 1174–1177 (2011). doi:10.1016/j.jbusres.2011.06.18

Isljamovic, S., Jeremic, V., Petrovic, N., Radojicic, Z.,: Colouring the socio-economic development into green: I-distance framework for countries' welfare evaluation, Qual Quant DOI 10.1007/s11135-014-0012-0

ITU. http://www.itu.int/en/ITU-D/Statistics/Pages/default.aspx (2013). Accessed 15 January 2014

Ivanovic, B.: Classification Theory. Institute for Industrial Economic, Belgrade (1977)

Jeremic, V., Bulajic, M., Martic, M., Radojicic, Z.: A fresh approach to evaluating the academic ranking of world universities. Scientometrics 87(3), 587–596 (2011a)

Jeremic, V., Isljamovic, S., Petrovic, N., Radojicic, Z., Markovic, A., Bulajic, M.: Human development index and sustainability: What's the correlation? Metal. Int. 16(7), 63–67 (2011b)

Jeremic, V., Bulajic, M., Martic, M., Markovic, A., Savic, G., Jeremic, D., Radojicic, Z.: An evaluation of European countries health systems through distance based analysis. Hippokratia 16(2), 170–174 (2012)

Jeremic, V., Jovanovic-Milenkovic, M., Martic, M., Radojicic, Z.: Excellence with leadership: the crown indicator of SCImago institutions rankings IBER report. Profesional de la Informacion 22(5), 474–480 (2013)

Jovanovic, M., Jeremic, V., Savic, G., Bulajic, M., Martic, M.: How does the normalization of data affect the ARWU ranking? Scientometrics 93(2), 319–327 (2012)

Kubiszewski, I., Constanza, R., Franco, C., Lawn, P., Talberth, J., Jaskson, T., Aylmer, C.: Beyond GDP: measuring and achieving global genuine progress. Ecol. Econ. 93, 57–68 (2013). doi:10.1016/j.ecolecon.2013.04.19

Mahdavi, S., Alanis, E.: Public expenditures and the unemployment rate in the American states: panel evidence. Appl. Econ. 45(20), 2926–2937 (2013). doi:10.1080/00036846.2012.690849

Markusen, J.: Putting per-capita income back into trade theory. J. Int. Econ. 90(2), 255–265(2013). doi:10.1016/j.jinteco.2013.04.03

Mendola, D., Scuderi, R., Lacagnina, V.: Defining and measuring the development of a country over time: aproposal of a new index. Qual. Quan. 47(5), 2473–2494(2013). doi:10.1007/s11135-012-9665-8

Moffat, I.: Ecological footprints and sustainable development. Ecol. Econ. 32(3), 359–362 (2000)

OECD Factbook 2013: Economic, Environmental and Social Statistics

Paruolo, P., Saisana, M., Saltelli, A.: Ratings and rankings: voodoo or science?. J. R. Stat. Soc. 176(3), 609–634(2013). doi:10.1111/j.1467-985X.2012.01059.x

Petrosillo, I., Costanza, R., Aretano, R., Zaccarelli, N., Zurlini, G.: The use of subjective indicators to assess how natural and social capital support residents' quality of life in a small volcanic island. Ecol. Indic. 24(1), 609–620 (2013)

Radojicic, Z., Isljamovic, S., Petrovic, N., Jeremic,V.:Anovel approach to evaluating sustainable development.Problem Ekorozwoju - Probl. Sustain. Dev. 7(1), 81–85 (2012)

Radojicic, Z., Jeremic, V.: Quantity or quality: What matters more in ranking higher education institutions? Curr. Sci. 103(2), 158–162 (2012)

Ram, R.,Ural, S.: Comparison of GDPper capita Data in PennWorld Table and World Development Indicators.Soc. Indic. Res. 1–8 (2013). doi:10.1007/s11205-013-0284-0

Saisana, M., D'Hombres, B.: Higher education rankings: robustness issues and critical assessment. How much confidence can we have in higher education rankings? EUR23487, Joint Research Centre, Publications Office of the European Union, Italy. (2008). doi:10.2788/92295

Saisana, M., D'Hombres, B., Saltelli, A.: Rickety numbers: volatility of university rankings and policy implications. Res. Policy 40(1), 165–177 (2011). doi:10.1016/j.respol.2010.09.03

Saisana, M., Tarantola, S.: State-of-the-art report on current methodologies and practices for composite indicator development, EUR Report 20408 EN. European Commission, JRC-IPSC, Italy (2002)

Saltelli, A., Ratto, M., Andres, T., Campolongo, F., Cariboni, J., Gatelli, D., Saisana, M., & Tarantola, S.: Introduction to Sensitivity Analysis. In Global Sensitivity Analysis: The Primer, vol. 304, pp. 569. Wiley, Chichester (2008). doi:10.1002/9780470725184.ch1

Saltelli, A.: Composite indicators between analysis and advocacy. Soc. Indic. Res. 81, 65–77 (2007)

Seke, K., Petrovic, N., Jeremic,V.,Vukmirovic, J.,Kilibarda,B., Martic, M.: Sustainable development and public health: rating European countries. BMC Public Health 13(1), 77 (2013). doi:10.1186/1471-2458-13-77

Soo, K.T.: Does anyone use information from university rankings? Edu. Econ. 21(2), 176–190 (2013)

Tarantola, S., Saltelli, A.: Composite indicators: the art of mixing apples and oranges. In: Munnich, R. (ed.) Composite Indicators - Boon or Bane. Statistisches Bundesamt, Germany (2007)

UNDP, Human development report. United Nations Development Program (2008)

Weiner, S.A.: Overview: the role of information policy in resolving global challenges. GPRI Policy Briefs 1(1), 6 (2013)

World Bank. http://data.worldbank.org/data-catalog/world-development-indicators (2013). Accessed 3 March 2014

Zhang, C.: Money, housing, and inflation in China. J. Policy Model. 35(1), 75–87 (2013). doi:10.1016/j.jpolmod.2012.04.06.

# THE ROLE OF SPORT IN ECONOMY

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***Abstract:*** *This paper deals with the relation of the level of GDP per capita and the total revenue in four major sport leagues in USA as the most developed sport market in the world. Business linked with sport is one of the most important and profitable parts of developed economy. Sport as an average individual perceives it today is a modern phenomenon of sophisticated approaches in marketing on the one and the expectances of profits from the investors on the other side. In this paper we prove there is a relation between the change of GDP per capita and total revenues in four major USA leagues. The results of this study show new insights to the perception of sport and can be a good indicator for further researches on that field.*

***Keywords***: *Sport industry, GDP per capita, economy, entrepreneurship, marketing, USA sport league*

## 1. INTRODUCTION

The main purpose of this paper was to illustrate the connection between sport industry and economy today. Current research focuses on the American sport market because the concept of private ownership reflects in their sport industry the most, relative to other countries. In other parts of the world government is much more involved in the ownership of sport entities but private investors are interested in commercially attractive sports. Other reason for choosing USA sport market is the fact the sport business is the most developed in there. Further, based on Forbes (2014) American sport companies have been found as one of the most valuable brands worldwide in 2013:

- 1. Nike Brand Value: $ 17,3 billion,
- 2. ESPN Brand Value $ 15 billion,
- 5. Under Armour Brand Value $3,7 billion etc.

The relationship between sports and the economy dates back to the first antique Olympic Games when athletes were compensated in either goods or species (Andreff, 2008). Then after sport was not very common phenomenon for some time. According to Ratten (2011) the entrepreneurship and sport management disciplines have grown significantly again in the past decade and further, entrepreneurship is an integral part of sports management and creates a competitive advantage for people and organizations involved in sport. This is somehow not surprising since in recent years renewed attention has been given to the role of entrepreneurship in economic development (Wennekers and Thurik, 1999) or as Ball (2005) argued it has become 'flavour of the month' both in practice and in the development of policy in political, industrial, educational and other setting. It is further recognized that the entrepreneurial process should lead to economic growth with the creation of successful growing companies like Microsoft, Intel and Sun Microsystems among others (Acs and Varga, 2005). From that view entrepreneurship is a necessary condition for economic growth and development (Cucculelli, 2012; Guloglu and Tekin, 2012; Audretsch et al., 2008). In this paper entrepreneurship is concerned as an interest of the individuals and groups in financing sport business in order to make a profit for investors.

This is an exciting time for sport industry around the globe. Not only sport is a multibillion dollar industry (many times over and still growing), but research that examines the management of sport in its various forms is expanding (Parent and Slack, 2007). Sport-related research can now be found in numerous subdisciplines within economics, including industrial organization, labor economics, and public finance (Kahane, et al. 2013). According to Humphreys and Ruseski (2008) several frameworks for defining the sports industry have been proposed; much of this research emerged from Europe, where government policymakers took an interest in estimating the overall economic importance of sport several decades ago:

- Gratton (1998) discusses a general method for estimating the economic scope of the sports industry, and points out that economic interest in sport extends well beyond the boundaries of professional sports. Gratton's (1998) approach uses existing national income and product accounting methods, essentially combing through existing national accounts data to identify sport-related sub-industries and aggregating across them;
- Davies (2002a, 2002b) adopts one national accounts approach, value added, to estimate the contribution of sport to the local economy in Sheffield, England.

In the course of time, sports industry started to grow and has become an important part in the business environment, thus inducing the interest of enterprises and investors. They saw in the sports industry a potential for growth and an opportunity for profits. Economics and finance adopt an instrumentalist notion of rationality in which the allocation of resources is the means (i.e., inputs) by which individuals and organizations seek to attain the end of maximizing their economic well-being (i.e., outputs) (Parent and Slack, 2007).

The most interested parts in financing the sports business are direct investors as also entrepreneurs that distribute and manufacture services and equipment related to professional or recreational sport. Further an interest in organizing sport events is seen also in governments that candidate for different challenges, from Olympic Games to World championships. According to Andreff (2008) the most features of the sports economy today are represented by: (1) sport shows and (2) sports mega-events. Indeed, it is impossible to separate the growth of corporate and government interest in the hosting of mega-events and the media discourse on place competitiveness from the commercialization of sport on a global scale and advances in communication technology (Whitson, 1998; Barney et al., 2002; Coles, 2003; Hall, 2006). Local, national, and international events have molded the sport industry into a shape not seen before (Hums, 2010).

Based on our literature review there seems to be, on the one hand an interest for many scholars for studying sport (e.g. Nicolau, 2011; Staurowsky et al. 2013; Taylor and McGraw 2006) and on the other hand for studying economic growth (e.g. Lewis, 2013; Kilian and Hicks, 2013; Kim and Kim, 2014) but the relation between sport industry income and economic growth measured as a change of GDP per capita till this research stayed an unexplored topic. Since Reynolds et al. (2000) claimed there is a correlation between the level of entrepreneurship (we propose that investors in sport business are mostly entrepreneurs) and between the growth of economy this paper tried to fill a literature gap on the field of GDP per capita and growth of sport business in USA.

There exists very little literature that uses the sports industry to study teammate effects in firms (Kahane, et al. 2013). So current study examines revenues of franchises in four most important sport leagues in USA; NBA, NHL, NFL, and MLB. We compared and examined the correlation between the growth of GDP p.c. and the revenue of franchises total income (gate revenues, sponsors, advertising, sale of merchandise etc.). The purpose of the paper was to examine the relation between the growth of economy, measured as GDP per capita with the growth of sport franchises measured as total revenue and set a theoretical platform for the further research.

## 2. THE DEVELOPMENT OF SPORT

Professional sports have emerged as a lucrative business, with many opportunities for sports marketers to flourish (Mason, 1999). Today sport as a whole concept is a business which affects us, even if we are not active athletes. For instance, many people buy clothes from sports companies that have transparent logos on the most visible places, computer games (FIFA, NBA live, Formula 1, etc), equipment, watches, and other products. As a condition for that, professional sports leagues provide a unique environment for marketing decisions and processes to occur, in a number of markets and at a number of levels, and should continue to be a growing segment within the broader, global, entertainment industry (Mason, 1999).

Organized sport has become an inevitable part of modern life. There are many definitions of sport; Westenbeek and Smith (2003) give following characteristics of sport:
- it has defined rules,
- it has complex organizational structure,
- it has a physical component included in the game,
- equipment and an appropriate playground are necessary,
- uncertainty is always present – there is always a chance of victory and defeat,
- modern sport demands cooperation and opposition.

Because of many specifics that are related to sport today, there is also another well-known definition of sport according to Parks et al. (1998) who defined sport as activity, experience or enterprise that is in correlation to fitness, recreation, professional sport or free time. Sport is very broad phenomenon. It can be on the one hand dance or jogging and on the other hand wrestling or chess. The sports industry's core sources of revenue can be divided into three main categories: broadcast rights, sponsorships (including licensing and merchandising), and ticketing and hospitality (such as entertainment and catering in sports venues) (Forbes, 2014). Nations, regions, cities and corporations have used mega-events to promote a favorable image in the international tourist, migration and business marketplace (Ritchie and Beliveau, 1974; Law, 2000; Malecki, 2004; Hall, 2006).

Professional sport industry is more regulated than recreational sport industry and has a different income structure. Income in professional sport comes from advertising, sponsorships, broadcasting rights, licenses, etc. It has become an industry which has the same »rules« as other industries. There must be multiple factors which can enable growth. Hardy (1986) defined three key factors of professional sport development:

- Sport product;
- Role of entrepreneurs and investors in product development;
- Types of different organizations and networks created by entrepreneurs.

An important role in the development of sport had also banks. Mandell (1984) stated that banks in USA played an important role in growth of sport industry by being flexible enough to finance new and poorly known industry. Beside this fact, which is true mostly in the later phases of sport industry development, the main credit for the success of sport industry is accorded to individuals who had a vision and saw an opportunity in investing in sport. Banks and other institutions played a more important role by financing franchises and enterprises and in this way accelerated the growth and enlarged the part of sport industry in the overall economy.

Profit seeking promoters and investors over-ran »hobby« investors and their organization became dominant in some sport (Hardy 1986). Sooner or later various leagues in the same sport merged in order to achieve larger market. Regardless of whether we observe NBA, MBL, NHL or NFL, they all have one thing in common; they were created by individuals (or group of individuals) who saw a business opportunity in sport. However, with increasing corporate involvement, an American model of private ownership is now influencing professional sport throughout the world (Nauright and Phillips, 1997).

## 2.1 Sport industry

There are several factors that potentially distinguish professional sports from other businesses, including stadium lease arrangements, monopolistic bargaining for broadcasting rights, territorial rights in predetermined geographic markets, and the capital depreciation of player contracts (Daly, 1977; Noll, 1974; Zorn, 1994). Based on development of sport organization we separate countries on four categories (Westerbeek and Smith, 2003):

- Highly developed: USA;
- Developed: West and middle Europe, Canada, Japan, Australia;
- In the process of development: South America, east Europe, China, India, and some South Africans countries;
- Undeveloped: Economically undeveloped countries, Africa, Asia.

Sport in general is a mix of different determinants as are equipment for practicing sports, related services (from services related to equipment to food services), sponsorship services (communication with potential buyers), promotion of health life and fair play etc.

## 3 ECONOMY AND SPORT

### 3.1 GDP per capita

Gross domestic product (GDP) is the monetary, market value of all final goods and services produced in a country over a period of a year and thus implicitly, and often even explicitly, identified with social welfare – witness the common substituting phrase 'standard of living' (van den Bergh, 2007). The real GDP (Gross domestic product) per capita is concerned as the most used indicator in defining the position of one economy over time or relative to that of other countries.

Guest and McDonald (2007) point out that the share in global GDP of a region is of interest because it indicates, to some extent, the economic, political and cultural importance of that region. Nevertheless, GDP deserves its special status because it represents an important bottom line: how much the market economy produces, and what it is worth (Boyd, 2007). In this study a GDB per capita purchasing power index was used. The objective behind a calculation of GDP per capita is to quantify the average amount of goods and services available to each person in an economy (Angeles, 2008).

### 3.2 Sport business

Entrepreneurship is a driver of change, innovation and employment in these industries and is crucial to meeting the rapidly changing demands of hospitality, leisure, sports and tourism consumers (Ball, 2005). Entrepreneurship is an important force behind success in any industry so in that manner also in sport.

According to Schumpeter's definition of an entrepreneur as an innovator, we could define James Naismith as an entrepreneur. In the 1892 he »invented« basketball – a basic product being a game, which nowadays involves a multi-billion industry. Money in that industry is generated by selling tickets, sport equipment, broadcasting rights, advertising, etc. on the one hand the invention itself it is not enough, for becoming an industry it needs to be organized, it needs promotion, league, rules and other definitions on the other hand. Then certain sport becomes a product which can be sold. A sport that can be sold in a form of a game ticket, broadcasting right, advertising space, and the name of the club becomes a brand with a value and can be sold to investors.

At one point the club owners and promoters noticed that people are prepared to pay for watching the game. The point where a spectator is prepared to pay for watching the game is the point where sport becomes a product (Hardy, 1986). This means that people are willing to trade money for their participation and satisfaction of their needs.

In this research we chose four major leagues in USA because they are the most prominent in the world, there play the best players from the entire world and these leagues are the most commercialized worldwide. The definitions of these leagues according to the data from their official websites are:
- MLB - Major League Baseball is the highest level of play of baseball in northern North America. It consists of the National League (founded in 1876) and the American League (founded in 1901).
- NBA - The National Basketball Association is the premier basketball league. It was founded as the Basketball Association of America in 1946, and adopted its current name in 1949, when the BAA partially absorbed the rival National Basketball League.
- NFL - The National Football League was founded in 1920 as a combination of various teams from regional leagues such as the Ohio League, the New York Pro Football League, and the Chicago circuit. The NFL partially absorbed the All-America Football Conference in 1949 and merged with the American Football League in 1970.
- NHL - The National Hockey League was founded in 1917 as a breakaway league from the Canadian National Hockey Association (founded 1909), taking all but one of the NHA's teams. The NHL partially absorbed the rival World Hockey Association in 1979. There are 30 teams, with 23 in the U.S. and 7 in Canada.


## 4. METODOLOGY

Based on the upper theory the following hypotheses were formulated:

*H1:* Total revenue in MLB is positively related to GDP p. c. in USA.
*H2:* Total revenue in NBA is positively related to GDP p. c. in USA.
*H3:* Total revenue in NFL is positively related to GDP p. c. in USA.
*H4:* Total revenue in NHL is positively related to GDP p. c. in USA.

The selected period for research was chosen for nine years from 2004 to 2012. The data for a research were gathered from an online free public bases. The data for GDP per capita p.p. in USA were gathered on the web site of the CIA (2014). This data show GDP on a purchasing power parity basis divided by population as of 1 July for the same year.

**Table 1:** GDP p.c. in USD in $10^3$

| Year | GDP p.c. in USD in $10^3$ |
|------|---------------------------|
| *2004* | 40,1 |
| *2005* | 41,6 |
| *2006* | 44,0 |
| *2007* | 45,8 |
| *2008* | 46,9 |
| *2009* | 46,0 |
| *2010* | 47,2 |
| *2011* | 49,0 |
| *2012* | 52,4 |

The data for total revenue for four major leagues in USA were gathered on Forbes (2014). Forbes is an American business magazine owned by Forbes, Inc. published biweekly and it features original articles on finance, industry, investing, and marketing topics. When the data were not available on Forbes we gather the data from the official web sites of four major leagues in USA (MLB, NBA, NFL, NHL, 2014).

**Table 2:** Total revenue in four major leagues in USA in $10^9$ USD

| League/Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|
| MLB | 4,3 | 4,7 | 5,1 | 5,5 | 5,8 | 6,6 | 7 | 7,2 | 7,5 |
| NBA | 2,9 | 4,2 | 3,4 | 3,6 | 3,8 | 4 | 4,7 | 4,9 | 5 |
| NFL | 6 | 6,2 | 6,5 | 7,1 | 7,6 | 8,5 | 9,3 | 9,4 | 9,5 |
| NHL | 2,2 | 2,2* | 2,3 | 2,4 | 2,7 | 2,7 | 2,9 | 3,2 | 3,3 |
| Sum | 15,4 | 17,4 | 17,3 | 18,6 | 19,9 | 21,8 | 23,9 | 24,7 | 25,3 |

*due to a strike in NHL in 2005 we took the arithmetic mean of 2004 and 2006 values*

## 5. RESULTS

A regression analysis was used to determine the strength of the relationship between the independent variable GDP p.c. and other dependent variables (total revenues in four major USA leagues) in statistical analytical program SPSS for Windows.

**Table 3:** Statistics for variables

| N | | GDP p.c. | MLB | NBA | NFL | NHL | SUM |
|---|---|---|---|---|---|---|---|
| | Valid | 9 | 9 | 9 | 9 | 9 | 9 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 45,8889 | 5,9667 | 4,0556 | 7,7889 | 2,6556 | 20,4778 |
| Median | | 46,0000 | 5,8000 | 4,0000 | 7,6000 | 2,7000 | 19,9000 |
| Mode | | 40,10[a] | 4,30[a] | 2,90[a] | 6,00[a] | 2,20[a] | 15,40[a] |
| Std. Deviation | | 3,71330 | 1,15758 | ,71434 | 1,42342 | ,41567 | 3,60131 |

The frequencies for the variables are shown in Table 3. The highest mean value among four major leagues in USA has NFL (7,78 in $10^9$ USD) and the lowest NHL (2,65 $10^9$ USD).

**Table 4:** Regression Model Summary

| Model | League | Adjusted R Square | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|
| 1 (constant) GDP p.c. | MLB | ,837 | ,926 | 6,481 | ,000 |
| | NBA | ,565 | ,787 | 3,378 | ,012 |
| | NFL | ,765 | ,891 | 5,201 | ,001 |
| | NHL | ,856 | ,935 | 6,976 | ,000 |

The results of the regression analysis show that all four hypotheses were confirmed.

*H1:* Total revenue in MLB is positively related to GDP p. c. in USA.
The relationship was found positive, high and significant (stand. coefficient 0. 926), with variance explained of 83,7%. T- test value was found as good (t = 6,481) and show that the relation is statistically significant at Sig. = 0,000.

*H2:* Total revenue in NBA is positively related to GDP p. c. in USA..
The relationship was found positive, high and significant (stand. coefficient 0. 787), with variance explained of 56,5 %. T- test value was found as good (t = 3,378) and show that the relation is statistically significant at Sig. = 0,012.

*H3:* Total revenue in NFL is positively related to GDP p. c. in USA.
The relationship was found positive, high and significant (stand. coefficient 0. 891), with variance explained of 76,5 %. T- test value was found as good (t = 5,201) and show that the relation is statistically significant at Sig. = 0,001.

*H4:* Total revenue in NHL is positively related to GDP p. c. in USA.

The relationship was found positive, high and significant (stand. coefficient 0. 935), with variance explained of 85,6 %. T- test value was found as good (t = 6,976) and show that the relation is statistically significant at Sig. = 0,000.

The results show that the relation between the growth of GDP per capita and total revenues of franchises in four largest US sport leagues is positive and very strong.

## 5. CONCLUSION

Sport is a dynamic business which changes constantly. On the one side the sport business tries to fulfill the needs on the market and satisfy expectations from the crowds. Thus on the other site inventors or the leading individuals in certain sport invent new games, new rules and new products or services related to that sport. When people follow new game it has a potential to become a promising business. In the frames of increasing the volume of sport industry, marketing and world known sport stars contribute to the revenue of sport organizations and realization of the aims. Entrepreneurial approach is crucial for development, promotion and commercialization of new sport. Sport and the story behind have big impact on people. Not only that people spend hours watching their favorite team or an individual but they are also prepared to invest their money to be a part of the story.

In current study we showed that the total revenue in four major leagues in USA is dependent from GDP per capita. This is not surprising since more money will people have the more will be able to spend also for sport.

Like every study, this one also has some limitations. One of them could be the fact that in current statistical analysis we used total revenue from four major USA leagues. It would make sense to develop the model with all incomes from all sport business in one country and compare it with GDP p.c. Another limitation could be the fact that this study could not be applied to all countries because of different popularity of different sport (e.g. soccer is popular in Europe vs. baseball is popular in USA). But these limitations present further research opportunities. Next research should be done with the integration of sport industry as a whole business and the comparison of the situations on different markets.

## REFERENCES

Acs, Z. J., & Varga, A. (2005). Entrepreneurship, agglomeration and technological change. *Small Business Economics, 24(*3), 323-334.

Andreff, W. (2008). Globalization of the sports economy. *Rivista di diritto ed economia dello sport*, *4*(3), 13-32.

Angeles, L. (2008). GDP per capita or real wages? Making sense of conflicting views on pre-industrial Europe. *Explorations in Economic History*, *45*(2), 147-163.

Audretsch, D. B., Bönte, W., & Keilbach, M. (2008). Entrepreneurship capital and its impact on knowledge diffusion and economic performance. *Journal of Business Venturing, 23*(6), 687-698.

Ball, S. (2005). The importance of entrepreneurship to hospitality, leisure, sport and tourism. *In Hospitality, Leisure, Sport and Tourism Network,1,* 1-14.

Barney, R.K., Martyn, S.G. & Wenn, S.R. (2002) *Selling the Five Rings: The International Olympic Committee and the Rise of Olympic Commercialism*. Salt Lake City: University of Utah Press.

Boyd, J. (2007). Nonmarket benefits of nature: What should be counted in green GDP?. *Ecological economics*, *61*(4), 716-723.

CIA (2014, April). Central Intelligence Agency. Retrieved from https://www.cia.gov

Coles, T. (2003). Urban tourism, place promotion and economic restructuring: the case of post socialist Leipzig, *Tourism Geographies, 5*(2), 190–219.

Cucculelli, M. (2012). Family Firms, Entrepreneurship and Economic Development. *Economia Marche-Journal of Applied Economics, 31*(2), 1-8.

Daly, J. C. (1977). *Pro Sports--should Government Intervene?: A Round Table Held on February 22, 1977, and Sponsored by the American Enterprise Institute for Public Policy Research, Washington*. The Institute.

Davies, L. (2002a). Consumers' expenditure on sport in the UK: increased spending or underestimation? *Managing Leisure, 7*(1), 83-102.

Davies, L. (2002b). Sport in the city: Measuring economic significance at the local level. *European Sport Marketing Quarterly, 2*(1), 83-112.

Forbes (2014, April). Information for the World's Business Leaders. Retrieved from http://www.forbes.com

Gratton, C. (1998). The economic importance of modern sport. *Culture, Sport and Society,1*(1), 101-117.

Guest, R. S., & McDonald, I. M. (2007). Global GDP shares in the 21st century—An equilibrium approach. *Economic Modelling*, *24*(6), 859-877.

Guloglu, B. & Tekin, R.B. (2012). A panel causality analysis of the relationship among research and development, innovation, and economic growth in high-income OECD countries. *Eurasian Economic Review, 2*(1), 32-47.

Hall, C. M. (2006). Urban entrepreneurship, corporate interests and sports mega-events: the thin policies of competitiveness within the hard outcomes of neoliberalism. *The Sociological Review, 54*(2), 59-70.

Hardy, S.H. (1986). Entrepreneurs, Organizations, and the Sport Marketplace: Subjects in Search of Historians. V S.W. Pope (ur.). *In The New American Sport History, Recent Approaches and Perspectives Illinois*, University of Illinois, p. 341-365.

Humphreys, B. R., & Ruseski, J. (2008). The size and scope of the sports industry in the United States. In *IASE Conference Papers* (Vol. 833). International Association of Sports Economists.

Hums, M. A. (2010). The Conscience and Commerce of Sport Management: One Teacher's Perspective. *Journal of Sport Management, 24*(1), 1-9.

Kahane, L., Longley, N., & Simmons, R. (2013). The effects of coworker heterogeneity on firm-level output: assessing the impacts of cultural and language diversity in the National Hockey League. *Review of Economics and Statistics, 95*(1), 302-314.

Kilian, L., & Hicks, B. (2013). Did unexpectedly strong economic growth cause the oil price shock of 2003–2008?. *Journal of Forecasting, 32*(5), 385-394.

Kim, T. Y., & Kim, S. (2014). The Catch-Up Illusion: Why Developing Nations that Experience Rapid Economic Growth Can Never Catch Up with Advanced Countries. In *Economic Growth* (pp. 237-261). Springer Berlin Heidelberg.

Law, C.M. (1993). *Urban Tourism: Attracting visitors to large cities.* London: Mansell.

Lewis, W. A. (2013). *Theory of economic growth* (Vol. 7). Routledge.

Malecki, E.J. (2004). Jockeying for position: What it means and why it matters to regional development policy when places compete. *Regional Studies, 38*(9), 1101–1120.

Mandell, R. (1984). *Sport: A Cultural History.* New York: Columbia University Press, 58-59.

Mason, D. S. (1999). What is the sports product and who buys it? The marketing of professional sports leagues. *European Journal of Marketing, 33*(3/4), 402-419.

MLB (2014, April). Major League Baseball. Retrieved from http://www.mlb.com

Nauright, J., & Phillips, M. G. (1997). Us and them: Australian professional sport and resistance to North American ownership and marketing models. *Sport Marketing Quarterly, 6*(1), 33-40.

NBA (2014, April). The National Basketball Association. Retrieved from http://www.nba.com

NFL (2014, April). The National Football League. Retrieved from http://www.nfl.com

NHL (2014, April). The National Hockey League. Retrieved from http://www.nhl.com

Nicolau, J. L. (2011). The decision to raise firm value through a sports-business exchange: How much are Real Madrid's goals worth to its president's company's goals?. *European Journal of Operational Research, 215*(1), 281-288.

Noll, R. (1974). *Government and the Sports Business*, The Brookings Institute, Washington, DC.

Parent, M. M., & Slack, T. (2007). Structural Factors Influencing the Volunteer-Professional Staff

Relationship in Large-Scale Sporting Events. *International Perspectives on the Management of Sport*. Elsevier Academic Press, 229-245.

Parks, J. B., Zanger, B., & Quarterman, J. (1998). Introduction to sport management. In Contemporary sport management, IL: Human Kinetics.

Ratten, V. (2011). Sport-based entrepreneurship: towards a new theory of entrepreneurship and sport management. *International entrepreneurship and management journal, 7*(1), 57-69.

Reynolds, P. D., Hay, M. & Camp, S. M. (2000): *Global entrepreneurship monitor.* London: Babson College.

Ritchie, J.R.B. & Beliveau, D. (1974). Hallmark events: an evaluation of a strategic response to seasonality in the travel market, *Journal of Travel Research, 14*, 14–20.

Staurowsky, E. J., Weaver, K., & Burchette, B. (2013). BL ParkhouseB. A. TurnerK. S. MilochMarketing for Sport Business Success 2012. Kendall Hunt Publishers Dubuque, IA978-0-7575-7948-6354 p. *Sport Management Review, 16*(4), 535-536.

Taylor, T. & P. McGraw. (2006) Exploring Human Resource Management Practices in Nonprofit Sport Organisations. *Sport Management Review, 9*(3), 229-251.

Van den Bergh, J. C. (2007). *Abolishing GDP* (No. 07-019/3). Tinbergen Institute Discussion Paper.

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small business economics, 13*(1), 27-56.

Westerbeek, H. & Smith, A. (2003). Sport business in the Global Marketplace. *In New York; Palgrave Macmillan*, vol. 53.

Whitson, D. (1998) Circuits of promotion: Media, marketing and the globalization of sport, in L. Wenner (ed.) *Media Sport.* New York: Routledge, pp. 57–72.

Zorn, S.A. (1994). Couldna done it without the players: depreciation of professional sports player contracts under the Internal Revenue Code. *Seton Hall Journal of Sports Law*, (4), 337-95.

# AIRPORT CHARGES AND DISCOUNTS: IMPLICATIONS FOR AIRLINES OPERATED AT AIRPORTS IN SOUTHEAST EUROPE

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**Abstract:** *Deregulation and liberalization processes during 1990s have led to tremendous changes in airline industry forcing all participants, primarily airlines and airports, to actively tailor their business strategy. In order to sustain profit in highly competitive market, a number of airports across Europe offer variety of airport incentives schemes which rely on airport charges discounts as a part of financial incentives as well as on other incentives. This paper illustrates the airport charges systems at several airports in the region of Southeast Europe. Moreover, paper aims to discover the impact of discounts within specific airport charges systems on airline financial performance.*

**Keywords**: Airport charges, Financial incentive schemes, Airport charges discount, Airlines

## 1. INTRODUCTION

The completion of the three liberalization packages in the European Union in mid-1992 has significantly increased the competition among the existing airlines, but has also led to penetration of new rivals on the market. The advent of low-cost carriers (LCC) has become one of the most important occurrences bringing a number of innovations in air transport industry. Liberalization and the entrance of LCC which offer significantly lower fares have forced the traditional flag carriers to compete for the first time (ELFAA, 2004). Prior to this event, the flag carriers were protected by governments who have even been closely involved with their daily operation and fares that were set through bilateral agreements between states. The aim of the liberalization process was to remove the regulatory protection that most of the airlines had received in the past. This led to serious financial problems at various European air carriers while some of them could not survive in the new environment and went bankrupt.

In order to retain market share and sustain profit growth, traditional airlines had to develop their own strategies which aim to reduce labour costs or increase productivity within the mainline airline operation. Mergers between traditional network airlines across national border, as well as establishing alliances comprising large number of carriers, have been deemed an appropriate response to the challenges imposed by fierce competition on the European market. Some airlines even set up a low-cost carrier subsidiary, while some others transfer services to regional partners.

However, liberalization has also a positive impact on the increased competition between airports bringing lower charges and more efficient services. IATA (2012) argues that a vast majority of European airports evolved from merely infrastructure providers into fully fledged businesses in their own right due to the deregulation and liberalisation of the European aviation industry during 1990s. Therefore, a number of airports in Europe tries to attract new airlines to start operating their services or stimulate existing airlines to expand their offers mainly through discounts on airport charges or/and other financial and non-financial incentives. These arrangements are very well known in the literature as Airport Incentive Scheme. The core strategy of majority incentives schemes considers the reduction of airport charges which are levied on aircraft operators for using airport facilities and services. Classification of airport charges is not standardized across European airports, but some of them are common and charged by almost each airport (landing charges, passenger charges and parking charges). Having in mind that around 3.5% to 5% of an airline's total costs are directly related to airport charges, it is not surprising that many airlines will seek those airports that can provide a variety of discounts.

The goal of the paper is to investigate the different types of incentive scheme employed by several airports situated in region of Southeast Europe (SEE), as well as financial implication that these

incentives may have on airline performance. The special attention is paid to discounts on airport charges since they represent a marketing tool used by airports that aim to increase traffic.

The paper is organizes as follows. Section 2provides an overview of airport charges on several airports situated in region of Southeast Europe (SEE). The essential indicators of current air transport market in the region of SEE are presented in Section 3. Section 5 investigates the different types of incentive scheme employed by specific airport from the sample, as well as their financial implication that these incentives may have on airline performance. Conclusion is given in Section 6.


## 2. AIRPORT CHARGES

Airport charges are charged to airport users for the use of airport facilities (EC, 2014). In other words, airlines that operate from specific airport are obliged to pay certain amount of money to cover the airport's costs for providing facilities and service. It is clear that these charges are indirectly paid by passengers and freight customers via the ticket price or freight forwarding fee. Nowadays, there is no straightforward classification of airport charges in Europe. Rather, airports adopt classification of airport charges that is the most suitable for them, although they may slightly vary one from another. However, airport charges systems have to comply with regulatory requirements set by authorities. Despite large combinations of different types and methods existing in practice, vast majority of airport charges systems display common elements. According to the ICAO (2009), airport charges contain several elements:
- landing charges based on aircraft weight formula,
- parking and hangar charges depending on aircraft attributes (weight, dimensions)and length of stay,
- passenger service charges levied through the aircraft operators where practicable,
- security charges,
- noise-related charges,
- emissions-related aircraft charges to address local air quality (LAQ) problems at or around airports.

Terms 'fees' and 'charges' are used interchangeably in this paper. Landing fees are very often levied as take-off fees, or fees per landing and take-off, the calculation of which is based on aircraft weight. These charges are sometimes called runway charges. Some airports use different calculation of landing charges for airlines operating domestic or international routes. Majority of airports considered in this paper levied landing charges based on Maximum Take-Off Mass(MTOM) either giving the price of service per ton or in the intervals of aircraft mass.

Passenger fees are commonly charged by the airport per on-board departing passenger and therefore represent a variable cost for airlines. These charges are normally billed to the airline, which then passes the cost onto the passenger. Airport often imposed different charges for passengers who fly international routes and those who fly domestic ones. Passenger fees can very often be combined with security service fees, which is a common practice especially at airports in Europe.

Aircraft parking fees are related to leaving an aircraft stationary at an airport. Parking charges are normally levied on a time basis, but can also be levied by weight or size of aircraft.

Ground-handling fees normally consist of the costs for handling of aircraft, passengers, baggage in arrival and departure. They are often levied on aircraft weight basis and given in interval prices for most airports from the set.

Moreover, in last few years a number of airports, especially those congested, charges airlines for noise they produce in the vicinity of the airport. These fees are levied by aircraft types that are categorised each according to their relative impact. More recently, some airports have also introduced emissions charges, aiming at an improvement of the local air quality at the airport and its surroundings. Noise charges, as well as emission charges, have not yet been introduced into charges systems of airports investigated in this paper. All the above-mentioned charges can be subject to modification to a certain level since they represent the essential part of incentives schemes developed by the large number of airports across Europe.

Although wide varieties of financial and non-financial incentives are currently available at a number of airports, the focus of this research is on financial incentive, particularly the part thereof that deals with

different discounts on airport charges. In addition to discounts on airport charges, financial incentives also encompass direct payments to airlines and different types of risk sharing arrangements. Reduced charges in Europe often cover passenger charges and landing fees in an all inclusive per passenger charge.

## 3. OVERVIEW OF SOUTHEAST EUROPE AIR TRANSPORT MARKET

The paper investigates the structure of airport charges at airports situated in following countries of Southeast Europe: Serbia, Montenegro, Croatia, Macedonia, Bosnia and Herzegovina and Albania.

**Table 1:** Air transport market indicators in 2012

| | Serbia | Montenegro | Croatia | Macedonia | Bosnia & Herzegovina | Albania |
|---|---|---|---|---|---|---|
| Population | 7.1 million | 0.6 million | 4.4 million | 2.1 million | 3.8 million | 3.2 million |
| GDP per capita | 5190 US$ | 7041 US$ | 13879 US$ | 4565 US$ | 4556 US$ | 4000 US$ |
| Total air pax (million) | 3.39 | 1.35 | 5.96 | 0.91 | 0.67 | 1.66 |
| Number of airports | 2 | 2 | 8 | 2 | 4 | 1 |
| Primary airport | Belgrade | Podgorica | Zagreb | Skopje | Sarajevo | Tirana |
| IATA code of prim. a/p | BEG | TGD | ZAG | SKP | SJJ | TIA |
| No. of paxat prim. a/p (million) | 3.36 | 0.64 | 2.34 | 0.83 | 0.58 | 1.66 |
| Flag carrier | JAT Airways, from 2014 Air Serbia | Montenegro Airlines | Croatia Airlines | - | B&H Airlines | - |
| Other a/p (more than 0.5 mil.pax) | - | Tivat (TIV) | Split (SPU), Dubrovnik (DBV) | - | - | - |
| Other a/p (0.3 - 0.5 mil.pax) | - | - | Zadar (ZAD), Pula (PUY) | - | - | - |
| Other a/p (0.05 - 0.3 mil.pax) | - | - | Rijeka (RJK) | Ohrid (OHD) | Mostar (OMO) | - |
| Other a/p (less than 50 000pax) | - | - | Osijek (OSI), Bol (BWK) | - | Banja Luka (BNX), Tuzla (TZL) | - |

Table 1 provides an overview of air transport market indicators in respective countries. It is evident that Serbia has the largest population with around 7.1 million passengers, followed by others the population of which ranges from 4.4 million (Croatia) to 0.6 million (Montenegro). On the other hand, Croatia has the highest value of GDP per capita (in current US dollars) which is also considered as a key driver of air travel demand. Tourism highly contributes to the country's overall GDP because of the seacoast and large number of islands which need regular air transport service for passenger mobility all year round and especially during the summer season. Montenegro has also developed summer tourism due to Adriatic coast. It has to be emphasized that all countries considered, except Croatia, have no domestic air traffic. However, the major common denominator for all selected countries is that they are all emerging markets recently passed (or still passing) through the process of transition.

## 4. AIRPORT CHARGES AND DISCOUNTS AT AIRPORTS IN SOUTHEAST EUROPE

Certain airport charges can significantly vary at different airports. Therefore, it is more useful to analyze total amount of charges levied rather than compare specific airport charges within airport

charges system. Graham (2008) shows that the total amount of airport charges and fees for A319 aircraft varies in the range of 6:1, thus amounting to less than EUR 1000 at Mumbai and Dubai airports, but reaching EUR 5000at Boston and London Heathrow airports.

This paper illustrates the airport charges imposed by different airports located in Southeast Europe, as well as their respective financial incentive schemes within airport charges systems. In order to enable the comparison across the airport set, several hypothetical premises were introduced. Firstly, all flights are operated by Airbus 319, with capacity of 156 seats and MTOM which equals 75.5 tones. Secondly, the assumed average load factor will be 80%, which means that total number of passengers per flight accounts for 125. Finally, an airline operates three flights on a daily basis, which accounts for 1095 flights annually.

**Table 2:** Prices of airport charges

| Airport | Landing | Lighting | Handling+ Centralizedinfrastructure + Use of Air Bridge | Parking | Pax int. service + Security charge (per pax) |
|---------|---------|----------|--------------------------------------------------------|---------|----------------------------------------------|
| BEG | 8.1€/t | 2.46€/t | (602.64 +335.36 +185) € | 1.8 €/t | (12 (T1) + 3.3)€ (16.5 (T2) + 3.3)€ |
| INI | 8.5 €/t | 2.1 €/t | (902 + 0 + 0)€ | - | 14 € |
| SJJ | 14 €/t | 40% Price of Landing | 1388 € | 2.55 €/t | 18 € |
| ZAG | 6.5 €/t | - | 900 € + (1.5 €/t + 1.3 €/pax) +0 | 1.5 €/t | (15 + 6.5) € |
| SPU | 8.5 €/t | - | 939 € + (0.9 €/t + 0.5 €/pax) +0 | 4 €/t | (10 + 2) € |
| DBV | 12.70 €/t | - | 964 € + (96.40 € + 1 €/pax) +0 | 3.3 €/t | (11 + 2) € |
| ZAD | 11.70 €/t | 25% Price of Landing | (927 + 51.78+0) € | 4 €/t | 12 € |
| TGD | 9.5 €/t | 25% Price of Landing | 775 € | 2 €/t | 15 € |
| TIV | 9.5 €/t | 25% Price of Landing | 1100 € | 2.5 €/t | 15 € |
| SKP | 7.6694 €/t | 25% Price of Landing | (995 + 0 + 40) € | 1.6 €/t | (11.50 +6) € |
| OHD | 7.6694 €/t | 25% Price of Landing | 760 € | 1.6 €/t | (10.20 +6) € |
| TIA | 650 € | 540 € | 1320 € | 140 € | (12.50 + 2) € |

Table 2 shows a comparative analysis of different charges within specific airport charges systems in SEE. All data used in the research are based on the information published by respective airports and listed in the References.  It has to be mentioned that calculation of landing fees, parking fees and lighting and part of centralized infrastructure (but only in some cases) are based on MTOM so that every part of a started ton is calculated as a whole ton. Lighting fees are levied in several cases: adverse weather conditions, during the night and on pilot request which will be the subject of Air Traffic Control (ATC) decision. All airports in the set calculate handling fees according to the categories based on MTOM by defining the price of each, although these categories may vary across the airports. For example, Macedonian airports and Belgrade Airport provide a list of handling fees with fifteen categories, airports in Montenegro and Croatia have thirteen, while Tirana Airport has only eleven. Concerning parking fees, airlines are granted first four hours free of charge at all airports considered. Passenger fees shown in Table 2 consider only passengers on international routes. It can be seen that some airports do not charge security fees. Total amount of passenger and security fees ranges from EUR 12 (Zadar Airport) to EUR 21.5 (Zagreb Airport).

Figure 1 presents the total amount of airport charges which an airline has to pay for a single flight operated from specific airport. The minimum amount which an airline will have to pay for using airport facilities and service is EUR 3216 (Split Airport), while the maximum amount is EUR 4652 (Sarajevo Airport). Average value of airport charges is EUR 3758 with standard deviation of EUR 480.
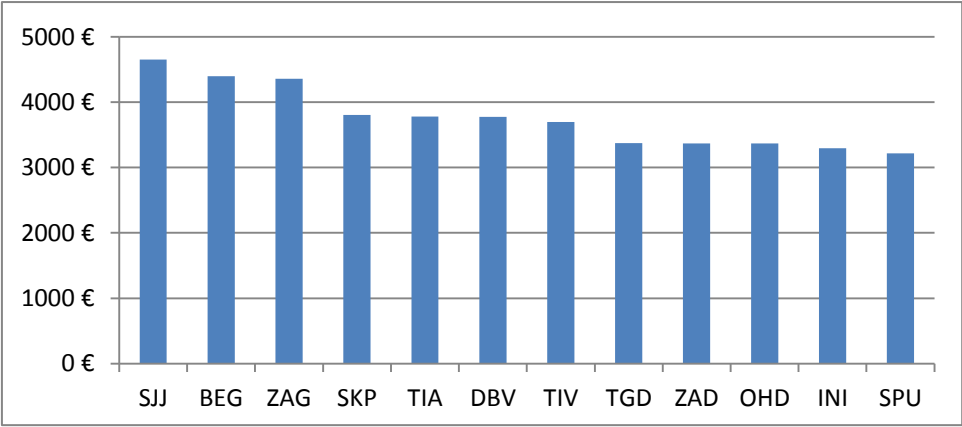


**Figure 1:** Total airport charges per one flight

Among the charges indicated above, passenger fees together with ground handling fees comprised the large proportion of aeronautical revenue that most airports in the region of SEE received from their users. As observed from Fig 2, the proportion of passenger service fees is 62% in the case of Zagreb Airport and 43% in the case of Dubrovnik Airport.
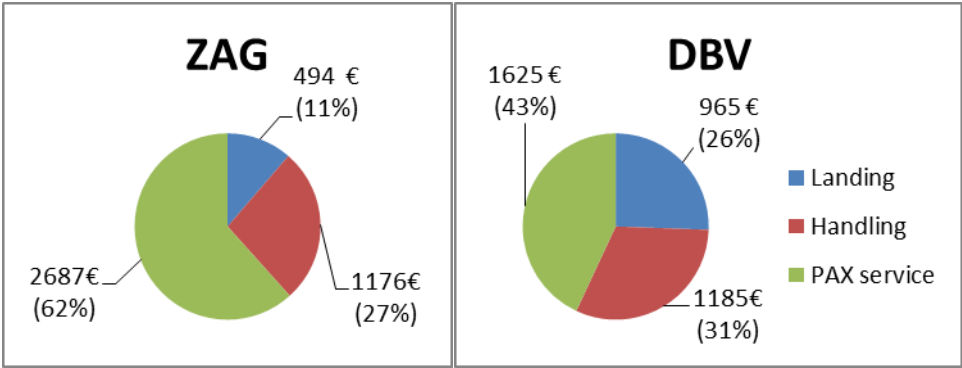


**Figure 2:** Share of landing, handling and passenger service fees in total airport charges

The amount of total airport charges levied on an annual basis for all flights carried by one aircraft and schedule of three flights per day is given in Fig 3. The average value of total airport charges for all airports is EUR 4.2 million.
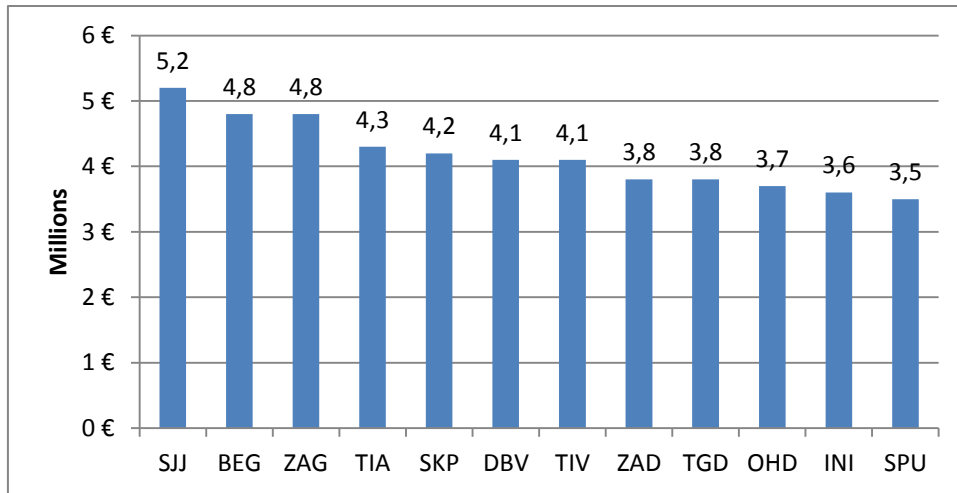
**Figure 3:** Total annual airport chargesfor all flights

The analysis of the airport incentive schemes operated by airports in SEE tends to display a few distinct characteristics, although some similarities with current practice in Europe may also be observed. The majority of airports investigated in this study suffer from transparency of their financial incentive schemes which an airline can obtain by flying from specific airport, although there are indications that these airports have developed financial schemes.

Among airports observed, Tirana Airport provides the most detailed information on financial incentive scheme offered to airlines. These discounts are published on its website and applicable to each airline which meets the imposed criteria. For airlines that operate or planning to operate from Tirana Airport the following incentives are available: new route incentive for scheduled traffic, additional frequency incentive for scheduled traffic, new route incentive for charter traffic, off-peak discount, non-satisfactory load factors, larger aircraft incentive, airport growth financial support, support for transit traffic and financial support on prepayment. For example, the airport offers the following two year scheme for introducing a new scheduled route: 100% reduction of the published landing, parking and lighting fees in the first twelve months and 10% reduction of ground handling fee, while for the subsequent twelve months 50% reduction of the published landing, parking and lighting fees is offered.

The airports from the set situated in Croatia, Zagreb Airport and Split Airport, have the same mechanism of calculating the reduction in charges (handling charges) based on total number of passengers carried in the previous year, although the percentages of reduction are not consistent. These two airports have transparent discounts on airport charges published on their Internet sites. Additionally, Zagreb Airport offers special anniversary discounts on handling charges for airlines which operate from this airport for a defined period of time.

Two Macedonian airports, Skopje Airport and Ohrid Airport, are operated by *TAV Airports Holding*. There are evident indices about the existing airport scheme, which are not fully published on respective airports' Internet sites. However, it is found that Ohrid Airport offers a reduction in the landing fee if an airline has more than fifty landing within one month.


Airports of Montenegro, namely Podgorica and Tivat airport, provide only partial information about conditions upon which an airline could obtain certain level of reduction in airport charges. Depending on the number of aircraft movements carried, these two airports provide reduction of up to 20% for handling charges. Moreover, airlines are also granted a promotional discount for new destination up to 30% in landing and handling fees for the period up to three years.

Finally, to the best of our knowledge, Belgrade Airport, Sarajevo Airport, Dubrovnik Airport and Zadar Airport do not provide any public information about potential financial incentive offered to airlines.

**Table 3:** Discounts on airport charges

|  | SPU | ZAG | OHD | TIV | TGD |
|---|---|---|---|---|---|
| Discount on | Handling | Handling | Landing | Handling | Handling |
| Criteria | Number of passengers in last year | Number of passengers in last year | Number of aircraft movements in one month | Number of aircraft movements | Number of aircraft movements |
| Number of carried pax or number of movements | 136875 | 136875 | 90 | 1095 | 1095 |
| Discount | 55% | 6% | 25% | 20% | 20% |
| Price without discount (annually) | 1028205 € | 985500 € | 638248 € | 1204500€ | 848625 € |
| Total discount | 565513 € | 59130 € | 159562 € | 240900 € | 169725 € |
| Price with discount (annually) | 462692 € | 926370 € | 478686 € | 963600 € | 678900 € |

Table 3 illustrates the discounts offered by respective airports with their implications to possible savings for an airline. It has to be emphasized once again that all calculations are based on the generic examples: airline operating with one aircraft (A319 with 156 seats) and a schedule which assumes three flights per day.

The discounts offered to airlines operated from the airports considered range from approximately EUR 60000 to more than EUR 0.5. It can be observed that the largest amount of savings can be achievedwith discount provided by Split Airport, while the smallest discount is offered by Zagreb Airport.


## 5. CONCLUSION

Revolutionary changes introduced in air transport industry as a result of deregulation and liberalization during 1990s have evolved intense competition not only between airlines, but also between airports. In such circumstances, most European airports were transformed from passive providers of infrastructure to commercially oriented companies. In order to stimulate the traffic growth which ensuressufficient revenue, a vast majority of airports have recently implemented incentive schemes for airlines within their airport charging system. On the other hand, airlines that strive to increase profit margins have seen these incentives as a suitable tool for additional cutting of their costs.

This paper provides classifications of airport charges levied at several airports situated in Southeast Europe. Additionally, a broad investigation of financial incentive, especially of those parts related to discounts on airport charges, has been conducted. The resultsshowfinancial discounts imposed by specific airport and their implications to airlines. The investigation also reveals that many airports from this sample suffer from the transparency of incentives schemes. Since the European Commission requires the principle of transparency and non-discrimination, the airports in this region should invest significant efforts to achieve this goal in the future.

**Acknowledgement**

# REFERENCES

AerodromiCrne Gore.Cjenovnik aerodromskih usluga. Retrieved fromhttp://www.montenegroairports.com/files/cjenovnik%20popusti.pdf(accessed 01.04.2012)

Aerodrom "Nikola Tesla". Cenovnici usluga. Retrieved from http://www.beg.aero/o_nama/cenovnici.156.html(accessed 01.04.2012)

AIP Srbija, 2013.Retrieved from http://www.smatsa.rs/AIS/Active/eAIP/04-Apr-2014-NA/2014-04-04/html/index_commands.html(accessed 01.04.2012)

Association of European Airlines and Seabury. (2012). Sustainable European Aviation. Retrieved from http://files.aea.be/Downloads/seabury_rept2012.pdf(accessed 08.04.2012)

Dennis, N. (2010, October). Old conflicts, new rivals? Airlines competition in the European market. Paper presented at the European Transport Conference.

European Commission.(2014). Airport charges. Retrieved from http://ec.europa.eu/transport/modes/air/airports/airport_charges_en.htm(accessed 08.04.2012)

European Low Fares Airline Association. (2004). Liberalization of European Air Transport: The Benefits of Low Cost Fares Airlines to Consumers, Airports, Regions and the Environment. Retrieved from http://www.elfaa.com/documents/ELFAABenefitsofLFAs2004.pdf(accessed 08.04.2012)

Graham, A. (2008). Managing airports.An international perspective (3rd edition). Oxford: Butterworth Heinemann.

ICAO. (2009). ICAO's Policies on Charges for Airports and Air Navigation Services (8th edition), Doc 9082/8.

International Air Transport Association.(2012). Fast facts. Retrieved from https://www.aci-europe.org/policy/fast-facts.html(accessed 01.04.2012)

Međunarodni aerodrom Sarajevo.Cjenovnik avijacijskih usluga. Retrieved from http://www.sarajevo-airport.ba/tekst.php?lang=bos&id=32&kat=2(accessed 01.04.2012)

Međunarodna zračna luka Zagreb. Cjenik temeljnih usluga. Retrieved from http://www.zagreb-airport.hr/Cjenik-temeljnih-usluga-44.aspx(accessed 01.04.2012)

Ohrid Airport–TAV Airports.OHD Tariff charges 2013.Retrieved from http://ohd.airports.com.mk/default.aspx?ItemID=355(accessed 01.04.2012)

Skopje Airport–TAV Airports.Price list 2014.Retrieved from http://skp.airports.com.mk/default.aspx?ItemID=355(accessed 01.04.2012)

Tirana International Airport.Aircraft charges. Retrieved from http://www.tirana-airport.com/files/downloads/pdf/AircraftCharges-EN.pdf(accessed 01.04.2012)

Tirana International Airport, Airline Incentive Policy. Retrieved from http://www.tirana-airport.com/files/downloads/pdf/Incentives-April-2012.pdf(accessed 01.04.2012)

Zračnaluka Split. Cjeniktemeljnihusluga.Retrieved from http://www.split-airport.hr/index.php?option=com_content&view=article&id=183&Itemid=174&lang=hr(accessed 01.04.2012)

Zračnaluka Dubrovnik.Cjenikusluga.Retrieved from http://www.airport-dubrovnik.hr/images/stories/cijenik/cjenik-2014.pdf(accessed 01.04.2012)

Zračnaluka Zadar. Cjenikusluga. Retrieved from http://www.zadar-airport.hr/cjenik-usluga(accessed 01.04.2012)