

Review paper

UDC: 005.591:658.5

005.336.1

doi: 10.5937/ekonhor1602153D

THE EFFECTS OF THE INTEGRATED APPLICATION OF BSC AND ABM TO ENTERPRISE STRATEGY AND EFFICIENCY

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The shortcomings of an individual application of some managerial innovation models in the domain of management accounting and strategic management in the modern business environment made research into the complementary and integrated application of managerial innovation models inevitable. The aim of the research is to show that the complementary use of the BSC and the ABM in managing enterprise strategy and efficiency eliminates the shortcomings of their individual application. The paper specifies the effects of the application of the BSC and the ABM on the enterprise strategy, particularly emphasizing the role of ICT in the course of implementation, and presents the results of the empirical research into the correlation of the BSC and the ABM regarding the strategy and efficiency of an enterprise. Despite possible problems and limitations, a proper synergic use of respective managerial innovations enables a better implementation of the defined strategies and improves the efficiency of the enterprise in the long run.

Keywords: BSC, ABM, strategy, information and communication technologies, enterprise efficiency

JEL Classification: M10, M21, M41

INTRODUCTION

Performance management systems include various organizational activities that managers apply in order to make their employees focus on strategy implementation (Otley, 1999). Performance measurement systems make enterprises plan and coordinate the activities performed by their employees by providing the exact and opportune feedforward and

feedback on how to operate, encouraging a different behavior when necessary (Anthony & Govindarajan, 2007). Defining and implementing a strategy becomes significantly complicated in a situation when an enterprise seeks to achieve cost efficiency, on the one hand, and offer customers products and services of a high quality, just in time, and with reliable delivery, on the other (Chenhall, 2003). Nowadays, enterprises adopt the strategic performance measurement systems that enable the formulation and successful implementation of the defined strategy. J. Bisbe and R. Malagueño (2012, 296-311) examine whether strategic performance measurement systems have an effect

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on organizational performance by defining strategic issues and strategic decisions regarding the process of (re)formulating strategies. J. Bisbe and R. Malagueño (2012, 309) point out that there is „a link between strategic performance measurement systems and organizational performance when the environment dynamism is low, but not when the level of dynamism is high“.

The significant factor in the implementation of strategic performance measurement systems is information and communication technology. The introduction and implementation of new management systems and information systems have become essential for the survival of the enterprises striving to meet the challenges of the global market. New measurement and management systems have grown in isolation from other initiatives and systems, resulting in repetition, discrepancy and inadequate communication. Due to the lack of an integrated model, these initiatives have failed to provide all the promised benefits. Information integration is essential for the optimal use of enterprise resources. The integration of cost management and performance management models provides a better information basis for decision making.

The subject of the research conducted in this paper is the synergistic use of strategic performance measurement systems, such as the BSC and the ABM, as a managerial innovation in today's business environment.

The main goal is to show that deficiencies in the elaborated managerial innovation can be removed by their complementary and integrated application.

Bearing in mind the defined subject and the research goal, the starting hypothesis is that the integrated application of the BSC and the ABM, with adequate software support, significantly contributes to the efficient implementation of the defined enterprise strategy and efficiency.

In order to verify the defined hypothesis, a qualitative methodology has been applied. The method of synthesis and induction and the empirical studies of different authors on the correlation between the BSC and the ABM are used to synthesize different positions, on the basis of which a general conclusion is

derived regarding the impact of the BSC and the ABM on enterprise strategy and efficiency.

In that sense, the paper first discusses the effects of the BSC and the ABM on enterprise strategy. Then, the significance of information and communication technology on the process of implementing the BSC and the ABM are elaborated. Ultimately, the paper provides the results of the empirical research in the correlation between the BSC and the ABM and enterprise efficiency. The corresponding conclusion is finally drawn and a position is taken on the validity of the starting hypothesis, which, in methodological terms, establishes a connection between the subject and the purpose of the research. The concluding remarks also highlight the theoretical and practical implications of the research, identify the perceived limitations and propose the direction of future research.

THE INFLUENCE OF BSC AND ABM ON ENTERPRISE STRATEGY

A strategy is a significant determinant of the success of an enterprise. The problem, however, does not occur in the process of the strategy formulation and development, but in the implementation phase. The BSC describes the strategy and parses it to individual parts in terms of the targets and the business success measures classified into four perspectives - the financial, the customer, the internal business processes, and the learning and growth perspectives. The BSC is ideally created by understanding and translating a strategy into objectives, measures, targets and initiatives for the realization of the defined goals and tasks from all perspectives. The BSC leads to zero-defect production. Employees are able to focus their energy and daily activities on a crystal clear objective - products and services free of defects, rather than on thinking about what constitutes a truly world class. By applying the BSC, as a model for translating a strategy into an action, enterprises create a new measurement language, which directs their employees towards fulfilling the defined objective.

The key element of the definition of a strategy is the implementation of very distinct activities in relation to competitors. In such a way, the enterprise has an ability to make a distinctive customer value proposition, thus differentiating itself from its rivals. This must be expressed in the BSC and has to be compared with the strategy of the enterprise. Thus, if an enterprise wants to differentiate itself by building a close relationship with its customers, then the BSC should reflect this strategic direction. After that, different performance measures need to be defined from different perspectives, which collectively affect the strategy implementation. The measures relating to services to target customers should be emphasized in the customer perspective and connected with the metrics in the internal business processes perspective and the learning and growth perspective. It is assumed that this chain of related measures, which reflect the activities of the selected enterprise, affects the growth of revenues and profits in the financial perspective. Once again, the BSC is an instrument to describe and articulate the activities which distinguish a particular enterprise from its competitors.

The BSC and the strategy go hand in hand. Regardless of whether the BSC is used to assess enterprise efficiency or not, it represents a powerful model to guide managers towards meeting strategic objectives. In accordance with this, R. Kaplan and D. Norton (2001, 42-43, 139) develop the strategy map concept, which uses the BSC for a detailed description of a strategy, using causal diagrams. A simple strategy map is shown in Figure 1. The strategy map links all the four perspectives of the BSC, showing how measurable objectives in each perspective contribute to performance in the next perspective. The strategy map begins with the learning and innovation perspective, which includes employees' competences, strategy awareness and the technology infrastructure as objectives. These objectives directly contribute to the internal business processes perspective, where employees apply their competences and strategic awareness and use the technology infrastructure. Similarly, the objectives from the perspective of daily business activities are complementary to the goals of the customer perspective. The goals from the customer perspective are complementary to the objectives of the

financial perspective. As each enterprise has a different BSC, each has a different strategy map. A strategy map is a detailed overview of how the enterprise achieves its strategic goals, showing an interaction among the perspectives in a BSC (Kaplan & Norton, 2001).

strategy map supports the idea that the financial performance and shareholder value are the ultimate goals in the numerous cases of the application of the BSC. All other perspectives directly contribute to the ultimate financial goals. In fact, non-financial measures in other perspectives are good forecasters of subsequent financial performance (Iltner & Larcker, 1998, 1-35). The strategy map emphasizes the fact that the BSC, describing in detail the strategy of an enterprise, can be used as an instrument for the strategy development and the assessment of the dynamics of the realization of the defined strategy.

The BSC finds its information support in Activity-Based Costing (ABC). The concept of Activity-Based Costing and Activity-Based Management (ABM) facilitate strategic cost management. This concept does not only show how activities consume resources

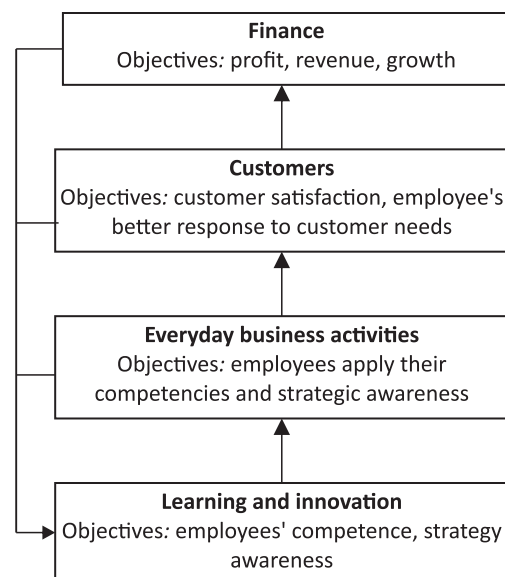


Figure 1 Strategy map based on BSC

Source: Author, based on: Blocher, Chen, Cokins & Lin, 2005, 742

and how products or customers cause activities, but also allocates costs to products and activities based on the resources consumed. The ABC describes an enterprise as a series of activities created to fulfil customer demands. The ABC provides managers with information to be used in activity management in order to improve competitiveness and achieve strategic goals. The ABC and the BSC are two contemporary and complementary concepts (Kaličanin & Knežević, 2013, 114). Đ. Kaličanin and V. Knežević (2013, 114) (2013, 114) point out that these concepts are directly correlated if the BSC includes all relevant information pertaining to the competitive advantage of an enterprise. This means that it includes information derived from the ABC. It is logical that most of the objectives and measures are defined precisely based on the financial perspective. The common goals in this perspective are revenue growth, increased productivity and lower costs. Since they are defined in an aggregate form, it is necessary to formulate goals and measures from the internal business process perspective, where value is made. As internal business processes consist of activities, the ABC is a necessary support for the analysis of the costs and effects of these activities.

Strategic choices determine activities. Successful enterprises spend their resources on the activities that lead to the biggest strategic advantage. Through measuring the costs of activities and identifying activities, the ABC and the ABM help managers understand the relationship between the strategy of an enterprise and the activities and the resources necessary for the implementation of the defined strategy.

The ABC and the ABM are critical for the enterprises that follow the cost leadership strategy in order to gain a competitive advantage, because critical activities, cost drivers and ways to improve processes in order to reduce costs are identified by them.

These concepts are also helpful to the managers who adhere to the differentiation strategy as they identify opportunities to increase value, develop the customer strategy, support the technology leadership strategy and establish the pricing strategy by identifying and analyzing the key activities, processes, cost drivers and methods of improvement.

Generally speaking, the ABM and the ABC provide answers to questions in the domain of strategic cost management, facilitate the best strategy identification and assist in the realization of strategic goals (Blocher *et al*, 2005, 162):

„How are cost structure and profits related to the competition? How does a shift from volume-based costing to activity-based costing reflect on pricing, product design, manufacturing technology and a decision on the production line? What are the effects of costs on different products when the enterprise adopts a new strategy; for example, when it shifts from the mass production of standardized products to small-series production in order to match customer preference? Has the enterprise adopted the most cost-effective distribution system for its products? How will changes in activities and components affect suppliers and customers in the value chain? How will changes in business processes affect the final result? What are potential cost savings if the enterprise applies the ABM in order to detect low-value-added activities and implement a low-cost strategy? How can the ABC and the ABM assist enterprises in implementing changes in order to achieve competitive performance strategies and short lead time in the delivery of their products?“

Performance management systems should be in line with the strategy. The enterprises that choose a cost leadership strategy opt for performance management systems, which are based on „conservative organizational culture, centralized organizational structure, specialized and formalized working procedures, simple coordination mechanisms, formal, financially-based strategic planning, short-term budgeting“ (Stojanović Aleksić, 2008, 150-159; Adler, 2011, 260). The enterprises that adopt a differentiation strategy create performance management systems based on „entrepreneurial organizational culture, decentralized organizational structure, non-standard working procedures, complex coordination systems, quality-based strategic planning, a long-term budgeting system“ (Adler, 2011, 260).

Starting from the enterprise's mission, vision, values and strategy, the BSC is made at the highest level - the corporate scorecard. The corporate scorecard contains a series of related targets and measures, and, on the basis of a cause-and-effect relationship, reflects

the strategy. Focusing on the corporate scorecard, scorecards at lower levels have been created in the enterprise. This enables top managers to gain an insight into how much managers at lower levels and individual employees contribute to the realization of corporate goals. Initiatives in all scorecards require the resources distribution as the basis for the budget proposal (Niven, 2002, 229).

With the BSC, as a guide, managers require feedback from and the involvement of their employees in the preparation of the budget. The BSC introduces a completely new management model, where strategy is at the center of the organizational universe, rather than financial control. Financial control would be suitable for the organizations engaged in reducing expenses, setting targets, controlling the actual performance based on target values and taking measures to improve the performance of the inefficient management team (Micheli, Mura & Agliati, 2011, 1117). In cost management systems, flexible budgeting is considered as a means of controlling overhead costs. In contrast, the system of strategic control, such as the BSC, places a greater focus on the key success factors and the application of the financial and non-financial indicators for a more efficient translation of strategic plans into action (Micheli *et al*, 2011, 1117).

INFORMATION AND COMMUNICATIONS TECHNOLOGIES FOR THE IMPLEMENTATION OF BSC AND ABM

Efficiency measuring is a process that evolved as enterprises changed their business processes in accordance with the requirements of the modern business environment. In the 1960s and the 1970s, enterprises used financial measures in order to assess their efficiency. In the 1980s, enterprises in the United States extended the scope of the examined measures, although the majority was based on short-term accounting and financially based measures, which were less competitive in comparison with the measures used in enterprises in Japan and Europe. In the 1990s, the BSC was introduced, which was considered as a major innovation in performance measurement. The

BSC has „quantified and incorporated non-financial information in the measurement reporting system, making it consistent and significant” (Swamy, 2002, 44).

Since the late 1990s, enterprises have expanded their operations chains, since the Internet has taken the irreplaceable role in conducting business operations. Thus, Web Analytics became significant with respect to the measurement and assessment of business performance. Web Analytics is the analysis of a website data, which enables the assessment of the success of a website and the comprehension of customer conduct and action. Thus, an enterprise could collect information on customer tastes, feedback and demographic information so as to enable a boost in its revenues and to reduce its costs (Swamy, 2002, 44). In today’s business environment, enterprises must make a „real mixture of traditional performance measures, support them with Web analytics and connect them with a vision and a strategy in order to produce a holistic view of organization” (Swamy, 2002, 46). In the 21st century, the BSC consists of two more perspectives, namely the e-Business and the User perspectives.

In the traditional BSC, the electronic business perspective links the targets from the customer and the financial perspectives and concentrates on higher profits and a market share. This perspective includes financial measures as well as market measures, based on „user interaction with Web-based technology”. The users of a Web-based system could be outward customers, inner employees, suppliers and partners. Regarding the electronic business perspective, it is necessary to analyze the types of the processes within Web-based initiatives and their primary purpose. The customer perspective is fit for the internal and the learning perspectives in the traditional BSC. The selection of metrics for this perspective imposes the consideration of the processes that improve efficiency, as well as the way in which customers evaluate these processes (Swamy, 2002, 47).

Starting from the requirements strategic and operational management impose on the modern enterprise, for the successful implementation of the BSC and the ABM, it is necessary that these

management and measurement systems should be automated. This is not only done for data updating, but also for preparing and disclosing reports. The user of Web-based system could be outward customers, inner employees, suppliers and partners. BSC means too much time and too many endeavors. The research „results indicate that 70% of organizations that have adopted the BSC and the ABM use some type of software in the implementation process to reduce effort” (Lawson, Stratton & Hatch, 2004, 40). „Of these organizations, 31% apply off-the-shelf software, 43% apply in-house software, and 27% of organizations use both” (Lawson *et al*, 2004, 40).

The need for the introduction of software in the process of applying the model of the BSC and the ABM increases with the size of the enterprise. Small enterprises do not apply software in the process of the implementation of the BSC and the ABM (59%) (Lawson *et al*, 2004, 40). This percentage reduces as the category of the enterprise increases. The same applies to off-the-shelf and in-house software. The percentage of the enterprises that apply it increases with the size of the enterprise. The main advantage of software application is reflected in saving time, which would otherwise be spent on the activities that do not increase value. Software encourages changes in business processes. The introduction and application of software, however, has its price. In addition to implementation and maintenance costs, the price includes a compensation for the right to use (a license). At the beginning of the BSC and the ABM implementation, the enterprise can start with a relatively simple system. Over time, however, managers become aware of the limitations of the traditional system and are willing to include more advanced systems. It is worth mentioning that „the most commonly used packages are Hyperion's Performance Scorecard and OROS” (Lawson *et al*, 2004, 41).

One of the most desirable system characteristics for the implementation of the BSC and the ABM is report design flexibility. The implementation of the BSC and the ABM is an iterative process. Most managers feel that they have enormous measures or no exact measure. The fact that an enterprise has a variety of measures does not guarantee that it has chosen the right one.

Gradually, after receiving feedback from customers, managers conclude that some measures are redundant and that some are missing. Flexibility is a significant characteristic in the process of the BSC automation. Enterprises can develop the Enterprise Resource Planning (ERP) systems; install the computers „that could be used by everyone and that could perform very complicated tasks, or install some other systems” (Lawson *et al*, 2004, 42-43).

ERP system vendors claim to offer

„an integrated solution for the planning, implementation, and control of business processes horizontally along the value chain SAP R/3 (the market leader) integrates processes such as the planning of sales and materials, production, warehouse management, financial and management accounting and human resource management” (Norton, 1999, 38).

Strategic Enterprise Management Systems (SEMs) allow for a strategy formulation and implementation by using the BSC, a strategy evaluation through value drivers and operational management through monitoring performance, making business plans, the consolidation of business plans and communication with stakeholders.

SEMs tend to connect performance measurement and control with strategic targets in trying to verify the complete focus of operational decision making on defining strategic targets (Fahy, 2001, 173). In order to qualify as a SEM, a system should have the following attributes (Brignall & Ballantine, 2004, 229):

„it should be built on ERP systems; SEMs should be based on data warehousing tools, such as ABM cost centers; SEMs include various integrated models, including ABM, BSC and other business reporting and analysis models; these systems have an internal and an external market focus as well, and give help in the strategic decision-making process”.

The market leader in ERP systems, SAP AG, offers an integrated system for SEM, containing five major applications and the related tools (Brignall & Ballantine, 2004, 229): „Business Planning and Simulation (BPS), Business Consolidation (BCS),

Corporate Performance Monitoring (CPM), Business Information Collection (BIC), Stakeholder Relationship Management (SRM)". Figure 2 illustrates how SAP's version of SEM underpins strategic change management and strategic management processes on the basis of the fundamental BSC model.

The ABC and the ABM are the information basis of the BSC. The successful and easier implementation of the ABM model requires the introduction of appropriate software. Software packages are available, robust, and easy to use, being subject to continual development.

Such software is designed to facilitate the construction of large-scale models of high complexity, facilitating cost allocation at the same time. ABM software is used to store information regarding the full assortment of finished products and work-in-progress made or sold. These models could be connected with the budgeting systems and the systems for reporting on actual versus budgeted performance. Also, these models enable the fortifying of the selling price and the making of other business decisions. The ABC could be related to the inventory control systems in order to provide the inventory assessment.

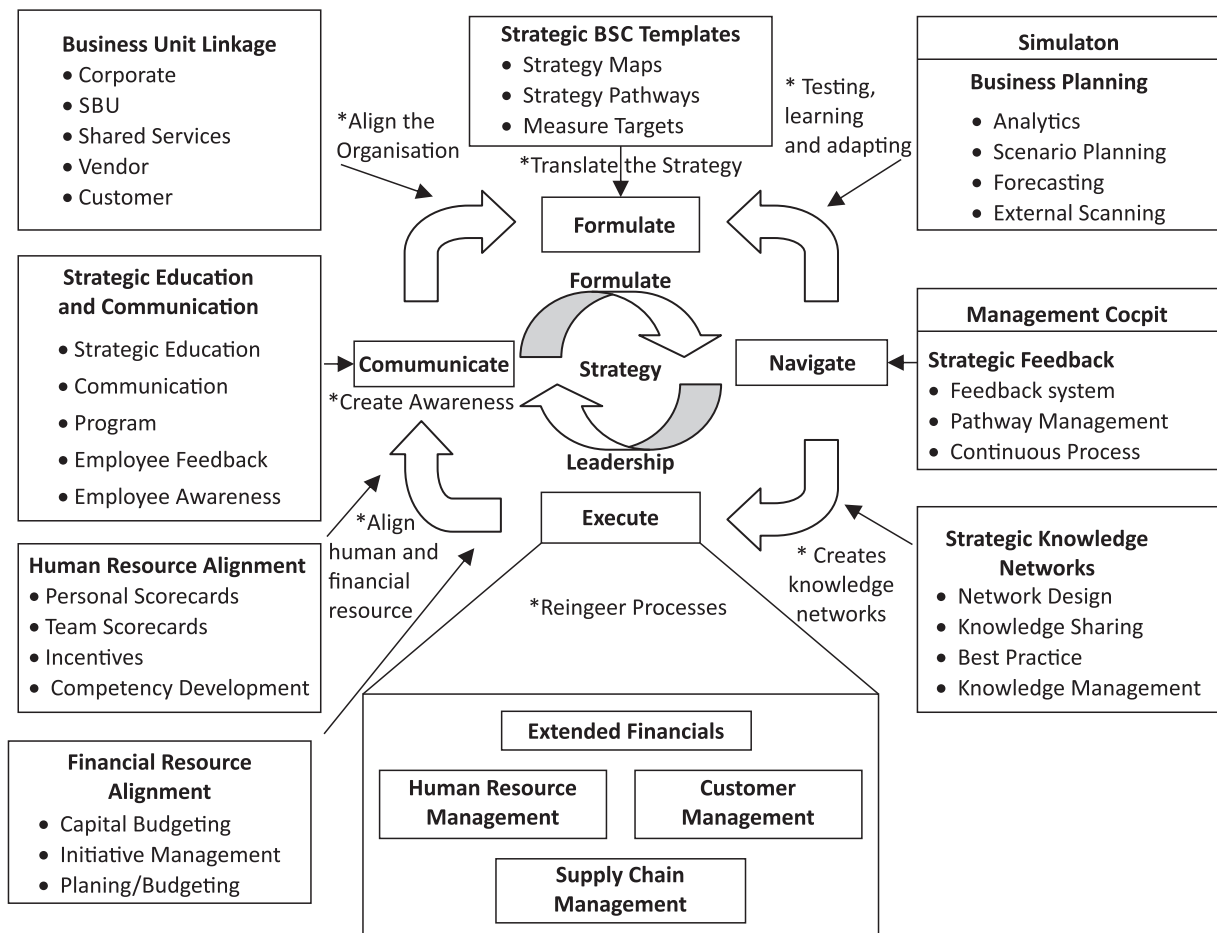


Figure 2 SAP's version of BSC model

Source: Author, based on: Norton, 1999, According Brignall & Ballantine, 2004, 230

THE EMPIRICAL ANALYSIS OF A CORRELATION BETWEEN BSC, ABM AND ENTERPRISE EFFICIENCY

Since the early 1980s, researchers in the field of management accounting have been describing the escalating insignificance of traditional performance measures and control models. The disadvantages of these systems are reflected in the inability to connect „performance measurement to the strategic initiatives of enterprises“, with an emphasis on „external reporting rather than accounting reports useful for internal decision making“ as well as in the failure to track the progress in technology, changing in line with the operations of production enterprises. The characteristics of the contemporary business environment have imposed an urge for the introduction and implementation of alternative performance measurement and control models.

The BSC was created as a result of the urge for making the management accounting functions - planning, control and performance measurement - better. A. A. Atkinson, R. Balakrishnan, P. Booth, M. J. Cote, T. Groot, T. Malmi, H. Roberts, E. Uliana and A. Wu (1997, 79-108) state that the BSC model has so far taken a significant place and role in management accounting. However, there are a small number of studies on how this concept affects the financial performance of enterprises, and it is insufficiently emphasized that the BSC is better in comparison with other performance measurement systems. The primary principle of the BSC is that success is primarily achieved based on the key non-financial measures, not on financial measures.

The ABC and the ABM have been advocated as the foundation for making strategic decisions and increasing a profit performance for more than a decade. The ABC information is broadly used for the evaluation of the continual improvement and control of the process performance. Although this concept has quickly been accepted, there are diverse opinions regarding its effectiveness, usefulness, relevance and practical applicability. Despite the fact that managers insist that management accounting systems should undergo a cost-benefit analysis, there is still no institutionalized empirical evidence of the validity of the benefits of the ABC. For this purpose, empirical

evidence on the financial effects of the implementation of the ABM is needed.

T. Kennedy and J. Affleck-Graves (2001) empirically prove that the implementation of the ABC significantly improves the relative performance of the enterprise, judging by both the market and the accounting measures. A study by S. A. Maiga and F. A. Jacobs-a (2003, 283-301) can be used to elaborate on the empirical analysis of the correlation between the BSC, the ABM and financial performance. What is of special importance is the impact of the integrated application of the BSC and the ABM on the efficiency of business operations. In order to examine the effects of the interaction between the ABM and the BSC, one variable is used to measure the ABM and four to measure the BSC.

ABM measures: In order to reach the desired quality in the implementation of the ABC, the variables most closely connected with the success of this concept, precisely those that most often appear in the implementation process, need to be considered. M. D. Shields (1995, 148-166) was the first to conduct an empirical study, proposing some „organizational and technical factors“ linked with the ABC success. The author states that the ABC is significantly correlated with several application categories: performance measurement, the activity analysis, product costing and reengineering. In addition, he finds that there is a significant correlation between a success and the percentage of the costs processed in the ABC. Hence, the variables discussed herein are associated with M. D. Shields's basic framework. Specifically, the data on the six ABC variables are collected (Maiga & Jacobs, 2003, 288):

„(1) top management contributions, (2) an agreement on tasks, (3) a connection with a ruthless strategy, (4) a connection with a quality initiative, (5) confidence that the ABC system could be practically applied by all the employees in the organization, not just by the Accounting Department and (6) the evaluation of performance/remuneration (which is supposed to be nearly related to the favorable outcome of the ABC)“.

M. D. Shields and M. A. McEwen (1996, 15-22) cite the seven ABC implementation success factors, these being as follows:

„the top management support; a connection with a competitive strategy, highlighting the quality and the Just-in-Time system/speed; a connection with the evaluation of performance and compensation; employee training; non-accounting proprietorship, adequate resources and the agreement on and the distinctness of the ABC targets”.

BSC measures. According to R. S. Kaplan and D. Norton (1992, 71-79), the BSC is measured by using some variables from the basic four perspectives. The customer perspective contains eight variable measures: „the customer response time, the customer content, the number of customer reclamations, the on-time delivery, the delivery lead time, the number of the returned deliveries because of the bad quality, overhaul costs, warranties and the market share”. The perspective of internal business processes includes six variables: „the production lead time, the ratio of a good output to the total output, the variance of the workforce efficiency, the variance of material efficiency, the level of the material waste, the percentage of the defective delivered products”. The learning and growth perspective implies three variables: „the number of new patents, time to market, the number of new products launches”. From the perspective of finance, three variable measures have been defined: „return on investment, sales growth, the operating profit”. Enterprise performance is evaluated according to the following dependent variables: „the product quality, customer satisfaction and the net profit rate”.

In order to obtain more valid results, it is necessary to include some control variables, such as the size of the enterprise. Some authors believe that small businesses often stay away from innovation not because of the resources deficit but because of the recognized resourced deficit. Conversely, large enterprises have more funds and management expertise. S. A. Maiga and F. A. Jacobs (2003, 289) point out that:

„there is no statistically significant relationship between the size of the enterprise and the decision on the adoption of ABC and ABM, that there is no

correlation between the size of the enterprise and the number of changes in management accounting, but that there is a positive correlation between the size of the enterprise and elaborated management innovation”.

In order to prove that the ABM and the BSC are significantly correlated, a hierarchical regression analysis is applied. The following regression models are derived to verify these proposals (Maiga & Jacobs, 2003, 291):

„Organizational performance (the customer content, the quality of the product and the net profit rate) = $\alpha_0 + \beta_1$ Size + β_1 Customer + β_2 Internal business processes + β_3 Learning + β_4 Finance + β_5 ABC + ϵ .”

„Organizational performance (the customer content, the quality of the product and the net profit rate) = $\alpha_0 + \alpha_1$ Size + β_1 Customer + β_2 Internal business processes + β_3 Learning + β_4 Finance + β_5 ABC + β_6 CUSTOMER*ABC + β_7 Internal business processes*ABC + β_8 Learning*ABC + β_9 Finance*ABC + ϵ ,”

where the size of the enterprise is expressed by the number of the employees, the ABC - the degree of the implementation of Activity-Based Costing, ϵ - the random error.

The study results point to the fact that each of the four perspectives in the BSC interfaces with the ABC in order to influence performance. However, no significant positive interaction was observed between internal business processes in the BSC and the ABC in order to influence the net profit of the enterprise. Theoretically and empirically speaking, it is possible to support the view that the BSC and the ABM can have a complementary or synergistic effect on the performance of the enterprise.

Another study worth mentioning in the context of the correlation between the ABC and the ABM and the financial performance of the enterprise is the one conducted by D. Cagwin and M. J. Bouwman (2002, 1-39). The impact of the ABC/ABM on financial performances is analyzed through this model (Cagwin & Bouwman, 2002, 5):

„ $\Delta ROI = f(ABC, \text{the variables allowing the application of this concept, the control variables})$ ”

Where,

„ ΔROI is the change in the return on investment, measured over the past three to five years”;

„The variables that allow the application of the concept of the ABC: information and communication technology, complexity/diversification, the importance of the costs, intra-enterprise transactions, the unused capacity and the competition”;

the control variables include the dimensions and the class of the enterprise.

D. Cagwin-a and M. J. Bouwman (2002, 2-3) show the positive synergistic effects of the complementary application of the ABC and other management initiatives, although it is not explicitly established with which initiative specifically the ABC generates the greatest benefits to the enterprise. When the ABC is used complementarily with other initiatives, then the net rise in the financial performance achieved by the enterprise is higher than in the case of the application of these initiatives without the ABC. There have been debates, though not proven, that the sum of the benefits of using the ABC is greater than the costs incurred in connection with it. Furthermore, there are positive associations between the ABC and a rise in return on investment if the ABC is applied in diversified enterprises, in an environment where the low-costs strategy is pretty significant.

S. Davis and T. Albright (2004, 135-153) examine the effect of the individual implementation of the BSC on financial performance. This study aims to examine the effect of the BSC on financial performance. The popularity of the BSC, as the management's instrument connecting employees' actions and objectives with the corporate strategy, has much increased since its introduction in 1992. The authors point to the influence of the application of this concept on the financial performance of the bank. This study is somewhat different from the previous studies (Davis & Albright, 2004; 136):

„although the previous research examines relationships between non-financial measures and performance, it does not seek to establish a connection between the implementation of the BSC and better financial performance; this study uses a quasi-experimental approach to examine the effects of the application of the BSC on organizational performance; the research is based on the actual data on the financial performance of the individual business units in the organization and applies a longitudinal approach in order to determine whether changes in financial performance occur after the implementation of the BSC”.

M. A. Malina and F. H. Selto (2001) examine the effectiveness of the BSC in communicating strategic goals and objectives. They conclude that there is an incidental relation between the role of the BSC as the instrument of management control and better performance, as seen by performance measures from the perspective of the BSC. The BSC leads to a better efficiency and profitability. Ittner *et al.* (2003), in contrast, conclude that there is a negative correlation between the implementation of the BSC and the rate of return on assets as financial performance.

W. B. Tayler (2010) conducts an experiment in order to assess the effects of the implementation of the BSC on the enterprise strategy assessment. The research results show that the managers involved in the selection of performance measures and cause-effect relationships in a BSC can alleviate the optimistic strategy assessment. When managers use data from the BSC for assessing the success of a strategic initiative in whose selection they take part, they assess it as more effective compared to the managers who are not involved in the initiative selection process. W. B. Tayler (2010) emphasizes the importance of cause-and-effect relationships in the BSC. Cause-and-effect relations alone are not a sufficient reason to motivate managers in the process of a strategy assessment. W. B. Tayler (2010, 1112) accentuates that „involving managers in the choice of performance measures, combined with a focus on the cause-and-effect chain, leads to a better assessment of the strategy of the enterprise”.

M. M. Cheng and H. A. Humphreys (2012, 899) investigate the effect of the key elements of the BSC on the managers' ability to explain the strategic significance of external information and use that

information for assessing the adequacy of the strategy of the enterprise. The authors find that the presentation of strategic targets, such as strategy maps, in integral connection with the explicit description of cause-and-effect relations in the strategy map, increases the relevance of management information and the assessment of the strategy appropriateness. The authors suggest that accountants should have special significance in facilitating managers' strategic actions through the „design and implementation“ of effective strategic performance measurement systems. A strategy map allows managers to filter out strategically irrelevant information. In addition, the BSC model increases managers' understanding of the strategic implications of external business trends (Cheng & Humphreys, 2012, 918-920).

A. A. Mohamed and T. Jones (2014, 1-22) investigate the relationship between strategic management accounting techniques, such as the ABM, and the profitability of the enterprise, and propose a holistic model of profitability based on the interactive and reversible relationship between cost drivers, asset drivers and the enterprise's revenue drivers. In addition to this, the respective model focuses on the balance between financial and non-financial information in profitability management. Such a model identifies strategic information on how enterprises create a profit and where they divert their resources in order to increase long-term profitability. M. Bourne, M. Kennerley and M. Franco-Santos (2005, 373-395) emphasize the importance of the interactive application of performance measures, and claim that performance measurement hinges on the diversity of contextual and process factors.

A. S. Maiga, A. Nilsson and F. A. Jacobs (2014, 85) assess the effect of the interaction of the cost control system, such as the ABC, integrated with information and communication technology on financial performance. The study results support the theoretical arguments. Although the main effects of the integration of information and communication technology and cost control systems on the financial performance are not significant, the very integration has a remarkable positive influence on financial performance. The significance of this study lies in the integrated observation of the ABC and information and communication technology on financial performance.

The previous studies analyzed the isolated impact of the ABC and information and communication technology on financial performance.

C. X. Chen (2015, 67) discusses the strategy testing by using multiple performance measures in a BSC. Internal performance measures promptly indicate problems with the strategy and permit the identification of where and why the strategy has failed.

M. Odar, M. Kavčič and M. Jerman (2012, 445) argue that enterprises in the Republic of Slovenia mainly use the traditional models of performance measurement. The modern systems of performance measurement are used occasionally. The authors also emphasize that the implementation of the performance measurement system depends on the different size of the enterprise. Small businesses are almost exclusively reliant on traditional models, whereas large enterprises apply more developed and contemporary models.

V. Domanović (2009) explores the possibilities and effects of the application of the ABM and the BSC in enterprises in the Republic of Serbia and concludes that, in the Republic of Serbia, there are a small number of firms applying the BSC and the ABM. In contrast, enterprises usually apply the traditional model of cost management and traditional budgetary control. As the reason for this, managers generally emphasize the high costs of the introduction and application of appropriate information and communication technology in the process of implementing the BSC and the ABM. Enterprises with an influx of foreign capital apply the BSC as a model of strategic control and performance management and use information from the ABC to build it. Such enterprises conduct a better strategic control, apply better employee incentive mechanisms and identify the individual and sectoral responsibility, which contributes to the improvement of the enterprise's efficiency in the future. V. Domanovic (2013) examines the effectiveness of performance measurement in the contemporary business environment on the basis of the empirical studies by different authors and relying on the original empirical research conducted in renowned enterprises in the Republic of Serbia. V. Domanovic (2013) concludes that the effectiveness of performance measurement systems can be viewed from two perspectives, i.e. through

enterprise-performance outcomes and employee-related outcomes. Performance measurement systems, specifically the BSC, should be used as a management instrument for employee motivation, the strategy implementation and the realization of the objectives, i.e. as an instrument „of strategic control and management control“ (Domanovic, 2013, 43).

M. Todorovic, Dj. Kalicanin and A. Nojkovic (2015, 45-58) test performance measurement models in enterprises in the Republic of Serbia. The authors find that 18.8% of the analyzed enterprises apply the BSC, i.e. different types of the BSC. The simplest type combines financial and non-financial measures; the second type includes making strategic maps; the third links compensation systems with the BSC. The authors also point out that the application of a modern performance measurement model, such as the BSC, is facilitated by the introduction and application of appropriate software, which is usually very costly for local enterprises. The introduction and application of modern performance measurement models depends on the size of the enterprise, the level of internationalization and profitability (Todorović *et al*, 2015, 53).

CONCLUSION

The modern business environment imposes the need for introducing innovation in the domain of the strategy definition and implementation and in the process of managing enterprise efficiency in the long run. In this context, innovation is introduced in the area of strategic management and management accounting. The two most prominent managerial innovation models are the Balanced Scorecard and Activity-Based Management. Of particular importance is their complementary and integrated application.

The research results confirm the starting hypothesis that there is a high positive correlation between the Balanced Scorecard and Activity-Based Management, on the one hand, and enterprise strategy, on the other. Particularly, the better the Balanced Scorecard and the more refined the Activity-Based Management, the greater the chance that the defined strategy will

be consistently implemented and that the expected and higher-than-expected economic effects of its application will be realized. In addition, these concepts can signal a possible failure of the application of the defined strategy, identify the causes of deviations from the established standards, on the basis of which it is possible to define corrective actions and improve the efficiency of the enterprise. Environmental dynamism is an important construct, which remarkably works on the relationship between strategic performance measurement systems and performance, in the sense that there is a strong positive relationship in a stable environment, which becomes weaker in terms of the dynamic environment.

Bearing in mind the results of the numerous studies on the correlation between management innovation, the Balanced Scorecard and Activity-Based Management, and enterprise efficiency, and respecting all their limitations, the general conclusion is that there is a positive correlation between them. In fact, the studies have shown that the enterprises that implement the Balanced Scorecard and Activity-Based Management improve their financial performance - the net profit rate, return on investment and the like. Nevertheless, one should not lose sight of the fact that there are different findings pointing to a negative correlation between these concepts. This is supported by the fact that the very process of the implementation of these concepts requires high costs, and, therefore, in some enterprises of low economic power, the introduction and implementation of these innovation models are not economically justified, as is determined by the cost-benefit analysis. In today's business environment, enterprises must make a real „mixture of traditional performance measures, align them with Web analytics and link them to the vision and the strategy in order to produce a holistic view of the organization“. Starting from the requirements which strategic and operational management impose on modern enterprises, and in order to provide an effective implementation of the Balanced Scorecard and Activity-Based Management, these management and measurement systems need to be automated.

There are also indications that the conditions that enable the implementation of the ABC („the sophistication of information and communication

technology, the absence of an excess capacity and a competitive environment") affect its efficiency. There is evidence that previously used Activity-Based Costing success measures, satisfaction with Activity-Based Costing and the financial benefits of Activity-Based Costing are the forecasters of an improvement of financial performance. Finally, no studies can definitely determine causality in the given time. Future research could include longitudinal studies investigating the improvement of enterprise performance before and after the implementation of Activity-Based Management.

The scientific contribution of the research lies in a better analysis of the complementariness and the integrated application of management innovation models, such as the Balanced Scorecard and Activity-Based Management. The literature treats management innovation models mainly in isolation, pointing to the limitations and the disadvantages of their use, but little attention is devoted to their integrated application. For modern enterprises, it is of special importance not only to implement certain management innovation models, but also to try to take advantage of a larger number of them. The research results can serve as guidance to managers on how the integrated application of the Balanced Scorecard and Activity-Based Management contributes to the successful implementation of the strategy and the improved financial performance of enterprises.

It is important, however, to point to the following research limitations. First of all, the paper only considers the two most prominent models of performance measurement and management, the Balanced Scorecard and Activity-Based Management in the modern business environment. Studies in the sphere of business economics and management, management accounting and strategic management distinguish among numerous performance management and measurement models, which have not been discussed in this paper. In this context, it is important to observe the integrated application of other performance management models. In addition, the paper has only considered the effects of the Balanced Scorecard and Activity-Based Management on enterprise strategy and efficiency. No effects on employee motivation, stimulation and rewarding have

been considered. Third, there are no recent studies on the topic of the integration of the Balanced Scorecard and Activity-Based Management; nor are there those on the effects of their integrated application on enterprise strategy and efficiency. Therefore, future empirical research should focus on the impact of the integrated application of alternative contemporary performance measurement models in enterprises in the Republic of Serbia.

ACKNOWLEDGMENTS

This paper is a part of the interdisciplinary research Project (No. 41010), which is funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

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Received on 5th June 2016,
after two revisions,
accepted for publication on 22nd August 2016.

Published online on 26th August 2016.

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