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The Impact of Business Strategy on Organizational Structure

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Abstract
This paper explores the impact of business strategy on defining and selecting the appropriate organizational structure. The paper will present the basic structural configurations: low cost structure, the structure of creating local customer value, the structure of global standards of excellence and commitment to service structures. Structural organizational solutions should be defined in a way that the needs of the key customer segments and defined strategies are met.
The implementation of business strategy involves selecting an appropriate organizational direction. One of the decisions that need to be made while defining a new business strategy is a choice of the target markets and target segments of the organization. It is also important to decide how organization will compete on the selected market. Key questions to be answered in this regard are: how will the organization create customer value on a defined market and what will make this value different than its competitors.
In order to implement a strategy it is also very important to define an appropriate organizational structure. It should be defined in an effective and efficient way so that the defined goals could be easily achieved. The most important decision in defining or designing new organizational structure is defining the key customer segments of and defining their needs. This decision will have its impact on laying the foundations of the organization and defining the organizational structure. Selection of the appropriate structural configuration and structure of organizational units and assigned responsibility are the basic steps of organization design that will meet the defined strategy.

Keywords
Business strategy, organizational structure, structural configuration.

Introduction

Most of the papers and research related to the subject of the impact of organizational strategies selection are associated with Alfred Chandler's work. In his book Strategy and Structure: Chapters in the History of the American Industrial Enterprise published in 1969, Alfred Chandler explains how strategy and objectives of the organization impact the way in which that organization will be structured. As a result of his research, we have a theory that the competition and organizational strategy are the key factors in defining organizational structure. (Chandler, 1969)

This paper gives an overview of some new configuration structure models that differ from other basic structure models that are commonly used. These configuration models are the result of research by Professor Robert Simons of Harvard University (2005). The focus of these models is not only on the number and the titles of organizational units that make up the structure of the organization, but also the impact and importance that each of those units has in the process of strategy implementation and value chain activity accomplishment.

The analysis of the impact of strategy on organizational structure will start from business strategy categorization, defined by Michael Porter (1980).

1. The three generic competitive strategies

There are many different competitive strategies that organization can implement. But most of them rely on the three generic strategies defined by Michael Porter (1980). Those generic strategies are:

1. Cost Leadership Strategy;
2. Differentiation Strategy and
3. Focus Strategy.

In order to make a decision about the right business strategy, management of the organization needs to answer two questions:

1. How will the organization create the value for its customers and
2. What will make this created value different from the competitions value? (Simons, 2000).

There many answers to these questions. Some organizations think that they can create value added by offering their products and services at low prices, hoping thereby to attract price sensitive customers. On the other hand, some organizations may choose to apply differentiating products or services in a way to offer a unique value for its customers. Others can decide to focus on the specific needs of specific market niches.

Achieving the first strategy involves the organization in generating the lowest costs in the industry, which is to be highlighted by this criterion in relation to other competitors. This strategy became especially popular in the 70's, with the development and expansion of the learning curves concept. Cost leadership means that the company achieves high efficiency in the use of its facilities, the efficiency in reducing costs on the basis of accumulated knowledge and experience in business, strong overhead cost control, minimization of costs in areas such as research and development, providing after-sales services, advertising etc. In this strategy, management needs to be focused on control and efficiency systems in every part of the organization.

Cost leadership position gives a number of advantages over the competition and environment to organization (Porter, 1980). Cost leadership provides an organization with a strong bargaining position, when we talk about large customers. While negotiating with the suppliers, large customers use their power and position in order to get lower prices, but those prices should not be lower than the lowest prices in the industry. Because of their efficiency, cost leaders are easily copying with changes in purchase prices when negotiating with their suppliers. Furthermore, the factors that led the organization to a cost leading position also represent a barrier to further entry of competition in that market. The same applies for products or services that are substitutes for the company's products or services. This position of cost leadership also protects the organization from different competition impacts (Porter, 1985).

The organization has several opportunities to use the advantages of the lowest cost over the competition (Thompson, Strickland III, & Gamble, 2008). One option is to use the low costs to attract new customers who are sensitive to changes in selling prices. At the same time, it must be taken into account that the profit realized from the increased market share must be higher than the profit that the company has waived by lowering selling price. Another option for using the advantages of lower costs is to achieve higher profit margins than the competition by offering products at the same price. In this way, the organization achieves a better financial performance through increased profits and return on invested assets compared to the competition.

The second strategy, the differentiation strategy, does not require low cost leadership. This strategy enables the organization to define higher price for its products, or to increase unit sales based on successfully achieved differentiation strategy. Organizations can apply this strategy on various grounds: top image, high-quality production, reliability, excellent service, dealer network development, after-sales services and many more. (Thompson et al., 2008)

The differentiation strategy achieves its purpose when the higher selling price exceeds the additional costs for implementing this strategy. Of course, in order to have positive results from this strategy, an organization needs to explore the needs and the behaviour of its customers so that it can recognize what is the actual value added for them. After that, organization must put its strategy in operation and add value to its offer, so that it can differ from its competitors. One more thing that also has to be done when implementing this strategy is the assessment of how much consumers are willing to pay for this value added.

The most effective approaches to differentiation are those that are difficult to be copied by competitors. Companies that have strong capital may eventually copy many features of the products or services of their competitors. For example, they can copy different payment terms and conditions (deferred payment), or guarantee for purchased products or locations. This is why why long-term differentiation needs to be based on the unique skills and expertise to build top management of value chain activities that competitors cannot easily copy. Some examples of successful and profitable differentiation are: product innovation, technical superiority, product quality and reliability, full service to a customer and unique competitive skills.

The bad side of this strategy is that the organizations usually have constraints in accomplishing greater market share. Differentiation brings about consumer perception of an exclusivity deal, which is inconsistent with a greater market share of organizations. Sometimes some differentiation activities and additional costs associated with these require the definition of high market prices, to cover all the additional costs such as: research and development activities, high design and product quality, high quality of materials used and extensive customer support. On the other hand, in some cases, defining low market prices and high market share is not in conflict with achieving differentiation in the offer over the competition.

The focus strategy differs from the cost leadership strategy and differentiation by the fact that companies focus their attention on a limited part of a total market. Similar to the differentiation strategy, the focus of the organization can have many different forms. The target segment can be defined by geographic uniqueness or special characteristics of products, which attract a relatively small number of customers. This strategy relies on the assumption that the company that organizes its activities and focuses on a narrower market niche will be more efficient and more effective than their competitors, who compete in the global market. As a result of this guidance of attention and activity, the company can achieve a better differentiation by satisfying the needs of a particular market, achieve lower costs, or both objectives simultaneously.

Although the implementation of this strategy does not result in cost leadership or differentiation, from the viewpoint of the entire market, this strategy provides an opportunity to earn above average of the industry where the company is located. The focus strategy which is based on cost leadership is similar to the cost leadership strategy in the overall market. The goal is to offer customers a product or service at a price and costs that are more appealing than the competitors'. Accomplishing these goals can be achieved by a stronger control of the factors that influence the cost, and value chain reconfiguration methods that will bring cost advantage. The focusing strategy based on the differentiation is aimed at achieving a competitive advantage by offering their products or services that match the specific characteristics of a market niche.

Differences between the three generic strategies are shown in the figure below:

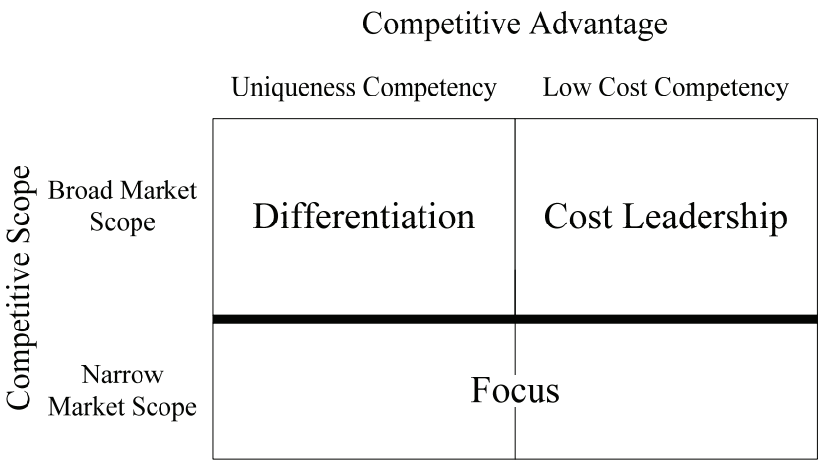

Figure 1 Porter's generic strategies
Source: Porter, 1980, p. 39

2. Generic configuration models of organizational structure

Organizational structure can be defined as a framework, usually hierarchical, which defines lines of authority and communication, resources, rights and obligations (Galbraith, 1977). There are many variations of organizational structure, as well as numerous variations of the corresponding models. These models found their wider use after a lot of research work related to organizational structure configuration. After these studies, it was concluded that a large number of models of organizational structure of real systems have a number of similarities with each other and that they can be reduced to do same with the abstraction of the less important features from the corresponding models. This is why these models are called basic models, and they refer to linear, functional, divisional, project, matrix and other models of organizational structure.

For the purpose of this study and research into the effect of choice of a business strategy on organization structure, we will use slightly different configuration models of organizational structure (Simons, 2005):

1. Low-cost structure;
2. Local customer value creation structure;
3. Global standard of excellence structure;
4. Commitment to service structure.

The basic building blocks of these configuration structure models are market-oriented organizational units and operational units. Market-oriented organizational units are parts of the company whose purpose is to directly respond to the needs and demands of the main or primary market segment. Operational units are centralized organizational departments of the company whose purpose is to provide products or services for market-oriented units.

Market oriented organizational units play a key role in gathering market information and distributing products and services. These organisational units have the task to collect data about customers, competition, opportunities and threats, and to transfer them efficiently to the decision making centres. Therefore, the responsiveness is an important goal of every organization unit design. Contrary to the objectives and responsibilities of the market units, operational units are responsible for processes standardization and efficiency achievement through the economies of scale. In this point of view we can conclude that these building blocks have conflicted aspirations. Achieving responsiveness to customers needs negatively affects the overall costs, while achieving economies of scale and standardization, offers lower overall costs. This is when company management needs to decide whether recourses, rights and responsibilities will be more directed toward market oriented or operative units. This decision is largely associated with the decision on the choice of business strategy, whether the company will be more oriented toward differentiation (increasing costs) or to the efficiency and cost leadership.

At this point, we will give a brief overview of each of these configuration models.

2.1. The low-cost structure

The low-cost structure is characterized by distribution of resources and responsibilities for the benefit of operational units. As its name suggests, the low-cost structure is an appropriate choice when company management aims to compete on a market where customers are primarily price sensitive. The basis of this strategy and structure are actually customers who appreciate consistency in a low price and quality.

Such structures can be found in almost all industries: fast food restaurants, outlet stores, financial services, airlines and others. Examples of companies with this structure are the Wal-Mart, Dell Computer, Amazon.com, EasyJet and others. Although this strategy can provide a massive demand, low prices generally provide a low profit margin. In order to achieve profitability, management of these companies must simultaneously achieve high efficiency of processes and paradigm shift. Accordingly, the amount of resources, decisions and responsibilities is mostly concentrated on managers of business units such as purchasing, production, research and development, marketing, etc. Organizational units are grouped by similar activities, and all internal services are united under one organizational core. Managers responsible for operating the core functions are trying to avoid overlapping and duplication of resources as much as possible by eliminating redundancy, encouraging specialization and ensuring that all resources are used in the best way.

If these companies become larger and cover a wider geographical area, their distribution network (the point at which the company meets the customer) is usually organized regionally. Examples of this are large market chains, which are organized by region. Separate distribution networks are formed to provide services to different regions (Western Europe, South-Eastern Europe, or the Middle East). Although there are more market oriented units, regional centres are still focussed on economies of scale and efficiency. The manner of organisational network management also influences efficiency of that network (Jaško, Jaško, & Čudanov, 2010). The assigned resources and the level of decentralization for every unit manager are very small.

Operational unit managers are responsible for store appearance, product range, the way goods are displayed, price, employees' appearance (uniforms) and etc. They are responsible for enforcing standards that the company defined (range, appearance, application of visual standards and so on).

A classical organizational chart of companies that hold large market chains is shown in the figure below.

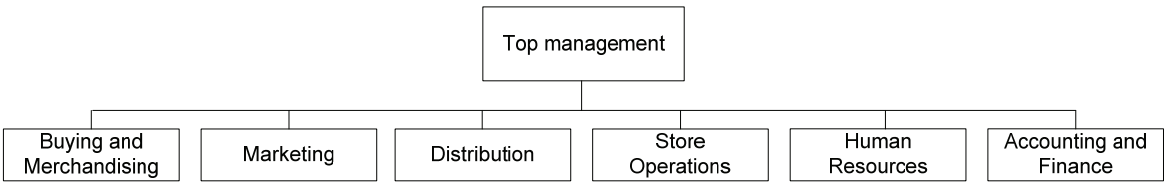

Figure 2 Organizational chart: example of retail store chain
Source: Simons, 2005, p. 44

On classical organization chart all the units are shown in the same way (the shape and the size of the blocks). This is why this chart does not give information about the way resources are assigned to different organizational units. To understand properly the impact of business strategy on organizational structure, we need to show the next image.

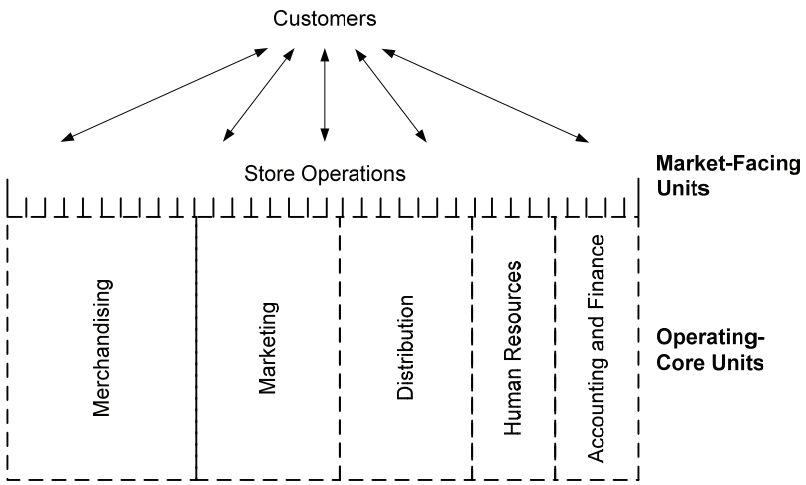

Figure 3 The low cost structure: the example of retail store chain
Source: Simons, 2005, p. 45

In the example shown above, although the actions are the meeting point of supply and demand, influence and power management actions are totally limited. Greater influence and decisions are in hands of operational units managers, who have as a main goal, achieving process efficiency and low operating costs.

2.2. The structure of creating local value for the customer

Unlike some companies that perform on the selected market with uniform products or with minor variations, other companies build their success by adapting their products or services to the specific needs

and requirements of customers in different regions. For this type of markets, it is not enough just to change the packaging of the product or to translate the user manual. The differences in customer preferences, and then federal regulations or prescribed standards (safety, size, etc...) require companies to make significant changes to the same products. For example, an international food manufacturer, such as Nestle, adapts their products so that they can respond to the local requirements such as different customer tastes or different legal restrictions. Global consultancies, such as PriceWaterhouseCoopers, adapt their offers towards different countries in which it operates. Cars manufacturers produce different versions of the same model, so that they can meet the needs of the local requirements (demands for additional equipment, interior design, etc.).

All these companies must make their decision making transparent to final customers. This is why a large number of functions, which could usually be centralized within operational units, now must be transferred to a regional centres or market oriented units. Thus, production, research and development, marketing, sales, administration and distribution network could be located within regional centres. In that case, regional units operate as an independent entity, and a result responsibility can be compared to the profit centre managers' responsibilities.

Organizing the same functions in different areas may cause resource duplication and reducing the economies of scale. It is assumed that the increased demand, due to adapting to the local requirements, will be higher than increased costs due to supply differentiation. Of course, the price of the product must be higher than the price in the case of the low-cost organizational structure. The example of resource allocation within the structure of creating value for the customers for international food manufacturer is shown in the figure below.

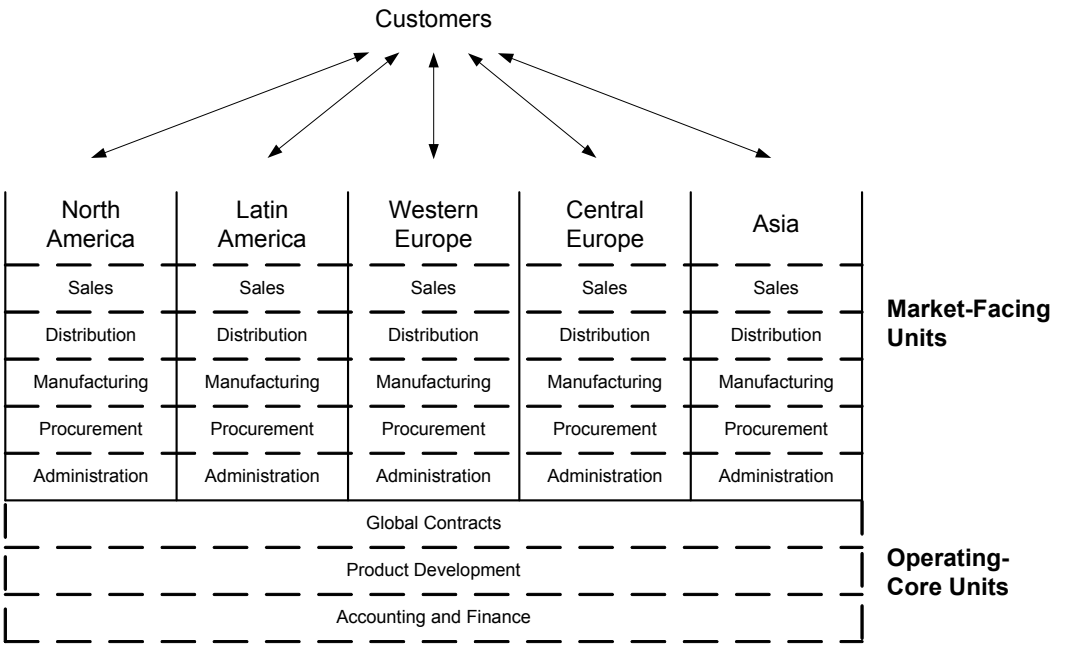

Figure 4 Local customer value creation structure: example of international food products manufacturer
Source: Simons, 2005, p. 47

From the customers' standpoint, this kind of structure provides the value required in a specific region. From the company management's viewpoint, responsibilities and resources that are allocated to the local centres are much higher than the ones that operational units have.

Local value configuration could also be applied to companies operating capital investments, such as companies for production and construction of energy systems, road infrastructure, railways, etc. The key customers of these companies are actually the governments of countries where they operate. In this case, the product is not the subject that needs to be adapted to the final customer. In order to be successful on a national level, companies tend to localize the entire performance, by setting up separate legal entities or buying existing local companies (raising the value of foreign investment in a country), and

transferring the part of activities and production on a local level (raising local population employment rate). Although the product is not the prime subject of the localization, the result is very similar: decentralization of decisions and resources on a local level.

2.3. The global standards of excellence structure

The global standards of excellence structure presents the structure that companies use in order to build their competitive advantage on the unique superiority of its products, which are recognized and evaluated by the customers themselves. Those customers are usually willing to pay relatively higher price. Features that make these products unique are usually difficult to be copied by competitors. The main values that these companies have are large investments in: technology (software, robotics), research and development (Boeing, Mercedes) and brand building (e.g. credit cards, consumer goods).

As the number of customers willing to pay high price for these products may be relatively small in one geographical area, the company's focus is on defining target market on a global level, in order to partly achieve the economics of scale. An example of a company that has a structure of the global standards of excellence is shown in the figure below.

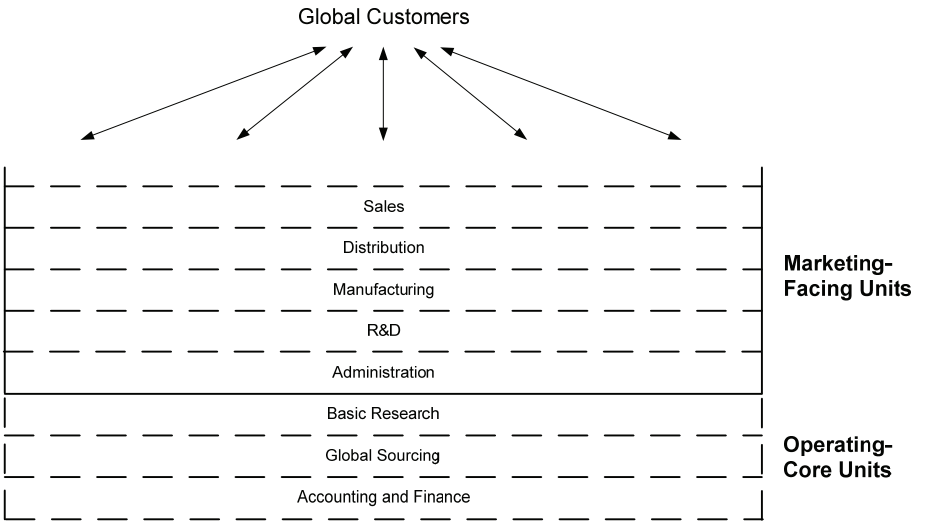

Figure 5 The global standards of excellence strategy: example of one business unit
Source: Authors

There is a different form of this structure. Companies that offer different products or target markets can create a special product division for every product family, and employees in these divisions will focus all of their attention to understanding customers' needs. This way, every division is more focused on its final customers, potential opportunities and competition activities. This is how Nokia spread its activities into four areas: mobile phones, multimedia, networks and business clients.

The example of the company composed of more divisions is shown in the figure below. Similar to the local value creation structure, duplication of features in several business areas (research and development, production, marketing) increases total costs, and therefore the selling price of final products. For the success of this strategy, it is essential that customers recognize and value the additional investments and efforts invested in the differentiation of products or services.

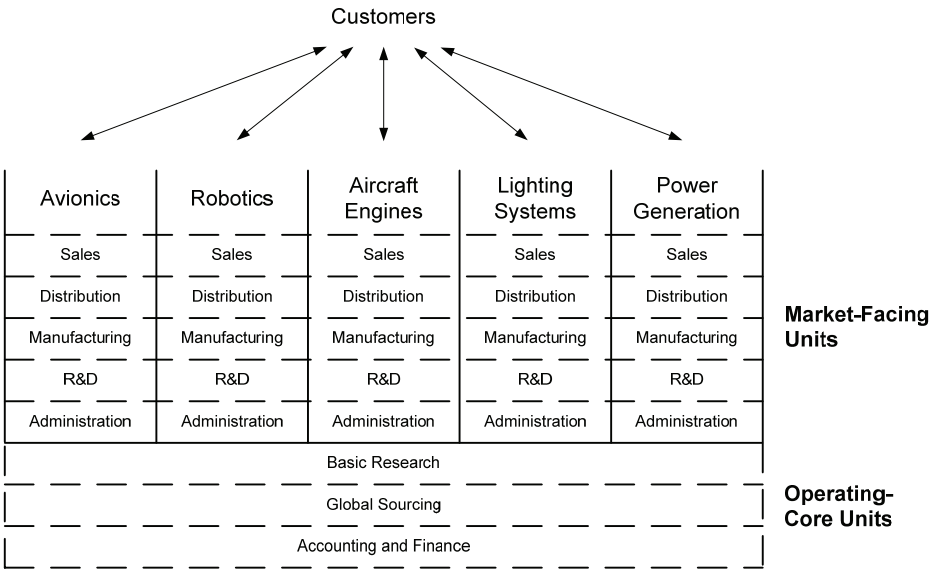

Figure 6 The global standards of excellence strategy: example of several business units
Source: Simons, 2005, p. 50

2.4. The long-term cooperation structure

The long-term cooperation structure is an appropriate structural configuration for companies, as its customers have large and important clients with whom they develop long-term cooperation in the provision of services. Sales of goods and services are not just one single event, but the beginning of a long-term cooperation, which aims to generate solutions that will have lasting client value. The basis of differentiation of these companies' offer is long-term customer satisfaction and effective responsiveness to their needs, especially when we talk about providing services.

Examples of such companies can be found in the information technology industry, such as Siebel Systems, SAP and IBM and the consulting firms like McKinsey, for example, and BCG. In this configuration, the organizational unit is established for each client or group of similar customers. At IBM, for example, they allocated 38 000 employees who worked on software development in 12 major groups: automotive, consumer goods, financial services, healthcare, telecommunications and so on. Each group or business unit focused on developing solutions to specific industries in which its customers are located.

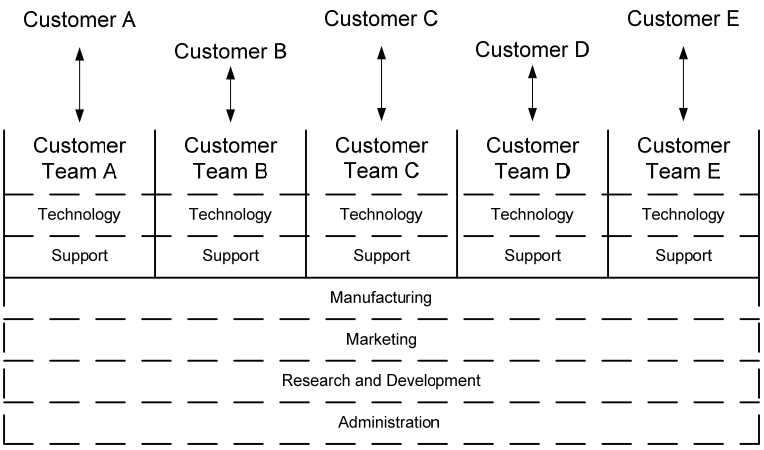

Figure 7 The long term cooperation structure: the example of the company for software development
Source: Simons, 2005, p. 52

The span of control in this design is divided relatively equally between managers of market-oriented units and managers of operational units. Operative core is mainly responsible for the activities of basic research and product development, platform development, production and corporate marketing. Market-oriented units are mainly based on teams and are responsible for a product tailored to the specific and unique customer requirements.

To make this configuration profitable, clients, companies must have specific requirements regarding the products and services of company that will be implemented by adapting products, sales channels and services. Because of the great need to adapt products and great need for direct collaboration with clients, this structure is quite expensive for the operation. Therefore, customers need to evaluate the offer and the company must be willing to pay a higher price so that the company can achieve good financial results.

3. Relationship between business strategy and organizational structure

Each generic strategy requires different skills and abilities of the organization for its successful implementation. Depending upon the selected business strategy, activities of the value chain will be more important for strategic success and competitive advantage. Leadership implies strong cost control systems, minimizing the costs, striving for economies of scale and learning curve effects. (Simons, 1995) For companies seeking differentiation in relation to the other, this behaviour would be counterproductive.

Similarly, each organizational structure has its strategic strengths and weaknesses. In order to harmonize the structure and strategy, management of the selected company must first configure a basic form or structure, and then modify if it is needed, in order to comply with the specific situation of the company. The following table shows the four generic strategies and structure of the configuration models, the most appropriate for a chosen strategy according to their characteristics.

	Competitive advantage	
Market goal	**The strategy of differentiation** ▪ The structure of global standards of excellence	**The low costs strategy** ▪ The structure of low costs
	The strategy of focusing-differentiation ▪ The structure of a long-term cooperation	**The strategy of focusing-low costs** ▪ The structure of creating a local value

Figure 8 The relationship between generic strategies and configuration structure model
Source: Authors

The strategy of low cost structure is the most common with the strategy that has resources concentrated in the operating core such as production, marketing, distribution, human resources and finance. This structure is characterized by minimal investment in research and development, because business strategy does not imply a focus on innovation and technological superiority, but the economies of scale, learning curve and reducing costs to account for all of these laws. Another structure that would partially match the strategy of low cost structure is the creation of local values. This structure would be appropriate for companies with several different business units.

Structure that will best suit the strategy of focusing on low-cost structure is the creation of local values. This structure is appropriate because it allows the company to develop competencies focused on the part of the total market (a niche), but at the same time emphasis is placed on leadership in costs. These characteristics are provided by a centralized product development and decentralization of functions such as procurement, production, distribution and sales. Decentralization of these functions involves decision-making closer to final customers, since between regional markets where the company acts, there are enough significant differences that require the duplication of tasks across multiple business segments.

For a proper differentiation strategy there are two structures, and a structure that will be taken as a starting base of organization design will depend on what this differentiation is based. If the offer is based on the differentiation characteristics of excellence of products or services, the corresponding configuration model is the structure of the global standards of excellence. This structure may have two

modifications, depending on whether the company has one or more business areas in which appearances. Both variants of the structure are characterized by greater investment in research and development (as opposed to structures that concentrate on efficiency and low cost). They achieved their superiority mainly based on results of the research and development that competitors cannot easily copy.

Another type of differentiation strategy is to find differences that are geared to a specific market niche. To implement this strategy, the strategy of global excellence can also be an appropriate one, if differentiation is related to product characteristics. If differentiation is related to a company (sales, installation, maintenance), the corresponding structure is the structure of long-term cooperation. This structure provides a good basis for the creation of an ability to adapt supply to the specific customer needs, especially in service activities.

Conclusion

The paper presents the basic generic business strategies, and four structural configurations. Presented strategies and configurations aptly reflect all the variations that can be found in practice. Appropriate strategies, as the fundamental purpose and point of departure in defining the organization, are associated with the corresponding configuration model structure. Connecting the generic strategy and structure configurations was performed according to the requirements of strategy and structure characteristics, which should respond to these demands. The selection of the appropriate configuration should not be regarded as a complete solution, but only as a starting point in defining the other elements of the organization (processes, coordination mechanisms, decision making and control systems, system reporting, reward systems). Each of the proposed configurations should be adapted and modified, because the strategies that come from the same category may be significantly different. Final modifications to the configuration model will depend on the factors of the situation in which the company is located.

The assumption here is that the choice of inappropriate configuration model would impede the effective implementation of the chosen strategy. Each configuration allows the development of different skills and abilities. These findings are important for management involved in defining the strategy and responsible for its successful implementation. SM

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Balanced Scorecard as a Strategic Management Instrument

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Abstract
Turbulent business conditions, globalised business operations and increasingly manifest technical and technological development imply creating and implementing an efficient performance measurement and management system. Actually, a company's intangible assets gain increasing significance in contemporary business conditions. For this reason, relating financial to non-financial performance measures, quantitative to non-quantitative performance indicators, and internal to external performance is becoming a necessity. It is the only performance system establishing connections at company level, and thus providing high performance achievements. All of this implies developing and using the Balanced Scorecard as one of company performance measurement instruments. It provides insight into four areas of management process – finance, consumers, internal business processes and innovation and learning.

Keywords
Performance measures, Balanced Scorecard.

Introduction

Performance measurement features as one of the most important management activities. Historically, organisations have always measured performance, but only with traditional, i.e. financial performance measures. Traditional performance measurement is based on a set of financial indicators primarily derived from accounting information.

One of the shortcomings associated with accounting criteria used for performance assessment is the fact that these criteria have historical character, i.e. they provide information only on the company's achievements in the past accounting period, and do not have sufficient capacity for forecasting future results and the company's financial status. Moreover, these performance measures support the company's movement towards higher quality and more successful operation to a very low extent, as they do not record the performance of processes and improvements from the consumer's aspect. A great help in overcoming this flaw is provided by Balanced Scorecard, as an approach combining financial and non-financial performance measures, with the aim of providing the management team with more relevant information on the activities they manage.

1. Performance measurement for management purposes

Performance measurement features as a highly significant component of business entity management, enabling the identification of the key market and structural factors of its business success. That is to say, success in accomplishing goals set in advance is also highly dependent on appropriate measurement of achieved performance in strategic activities. Consequently, the primary goal of performance measurement is continuous monitoring of activities and outcomes resulting in creating value for all stakeholders.

Performance test results are a significant information background for managerial structures, who use them as a basis for performing comparative analyses of what has been accomplished and comparing it

with what was planned for a particular period. Thus, performance testing enables full comprehension of all reasons for the achieved performance levels and undertaking activities aimed at improving future values. A well-designed performance measurement process can be an important stimulus and motivating factor in performing the company's business activities. It must be emphasised, however, that the choice of performance measures presents a very complicated problem, as a chosen measure, in most cases, expresses a single aspect of reality of phenomena and processes which are, in essence, multidimensional. Consequently, several performance measures can be designated for each specific activity, but one must point out that none of them are exact, and the aim is to create a more realistic picture of the realised activities. In order to set up a more appropriate performance measurement system in this context, we must mention the fundamental determinants affecting the choice of performance measures. In this sense, a performance measurement system needs to:

- Be directly related to the formulated strategy;
- Have the possibility for quantitative expression;
- Be comprehensible;
- Be predictable;
- Be resistant to manipulation and
- Be suitable for adjustments.

Good performance measures must be the expression of a business entity's formal strategy. Otherwise, they might result in confusion and lack of accurate information on the commitment of available resources.

The possibility of quantitative expression of performance measures is a vital characteristic implying the presence of skilled and creative analysts able to express all performance measures mathematically.

Understandability of performance measures is of vital significance, because only understandable performance measures can be utilised properly. On the other hand, incomprehensibility of performance measures may result in wrong decisions and corrective action that will reflect unfavourably on the total value creation process. Moreover, research has shown that understandability is closely linked to individuals' ability to monitor a certain number of performance measures.

Information predictability represents a basis for establishing a performance measurement system. This characteristic is closer to non-financial information in comparison with financial information. Consequently, the predicted performance measures warn managers of the possible occurrence of problems before the emergence of more serious consequences of their occurrence.

It is vital for performance measures be selected in such a way that they can be interpreted freely and thus manipulated. So, for instance, the value of an order can be diminished if there is a possibility of its subsequent cancellation.

Finally, bearing in mind the increasingly dynamic business conditions, performance measures must be easier to adjust and modify. Actually, changes in the working conditions also result in methods of performing business activities. As a result, old performance measures characteristic of the previous procedures must be abandoned, and new measures, consistent with new performance indicators, must be adopted.

2. A new paradigm in performance measurement in contemporary business conditions

New business conditions are characterised by changes in all spheres, resulting in radical changes in the setting where business subjects perform their activities. Namely, information society entails a new environment for companies. Unlike industrial society, when business entities used to create value by transforming physical, i.e. tangible assets into final products, nowadays research shows that the book value of tangible assets accounts for 10-15% of the company's market value (Kaplan & Norton, 2001, p.2).

An extreme example of this is Microsoft, whose market value in 2000 amounted to over 600 billion USD, whereas the book value of its assets amounted to 45 billion USD, about 22 billion of which accounted for current assets. Hence, in the information era, intangible assets (such as customer relationships, employees' skills and knowledge, information technology and organisation culture open to innovation, problem solving and business enhancement) are becoming the principal source of competitive

advantage. In consequence, i.e. as a consequence of the fall in the significance of physical assets, financial measures of business success gradually lose their significance.

Traditional financial reporting systems provide an indication of how the organisation performed in the past, but very little information about how it might perform in the future (Meyer, 2002, p. 32). So, for instance, an organisation may decide to reduce its level of customer service in order to boost current earnings, but this might result in the reduction of future earnings as a consequence of lower customer satisfaction levels.

Namely, traditional performance indicators, such as sales, market share, return on investment and return on assets, net profit and return on equity do not include intangible assets, due to the fact that they are too difficult and complicated to understand in financial sense, with an unclear correlation between performance measures and the business subject's strategic objectives (Burch, 1996, p. 505).

These performance measures are based on financial indicators which, in addition to being subject to independent external revision, often tend to produce a distorted picture of the subject's financial status. The presence of shocks on financial markets in countries with rich accounting tradition and numerous financial scandals were accompanied by the fact that these companies' financial reports contain certain hidden losses, incorrect accounts of liabilities and unrealistic profit levels. All of these resulted in significant losses of invested capital and huge disappointment among shareholders. As a result, there is a certain level of distrust of traditional company performance indicators. The assessment of their qualities must be subject to new evaluation, which is less complicated for investors, who are not trained in proper interpretation of the existing information, let alone for their evaluation.

One must point out that this is a serious task implying professional financial analysis. Therefore, the requirement to comply with certain standards contributes to simplifying the state in these areas of investment.

As a consequence of the above mentioned, investors sought development of a new performance measurement system that will comprise not only financial success indicators such as accompanying lagging indicators, but also non-financial measures that have the character of leading indicators in achieving future financial performance. Starting from the changed circumstances, R. Kaplan and D. Norton presented their Balanced Scorecard in 1992, as a set of performance measures supplementing financial performance measures, and thereby enabling an integrated view of an organisation's business performance. Actually, it was originally created to supplement traditional performance measures with criteria measuring performance from three additional perspectives: consumers, internal business processes, and learning and growth. In this manner, the Balanced Scorecard addressed the serious shortcomings of the traditional performance measurement systems, i.e. their inability to relate an organisation's long-term strategies with their short-term activities. Namely, operative and management control systems were, in most companies, related to financial measures, which were very little connected with the companies' progress in accomplishing long-term strategic goals. Therefore, emphasising short-term financial measures in these systems lead to the development of a gap between the strategy and its implementation.

Nevertheless, managers applying the Balanced Scorecard did not rely on short-term financial measures as the main company performance indicators; instead, the Balanced Scorecard introduced four new managerial processes which, both individually and in combination, contributed to connecting long-term strategic goals to short-term action. In 1996, companies applying the Balanced Scorecard enhanced it as a strategic management system connecting long-term strategic goals and short-term goals. The development of the Balanced Scorecard was a consequence of the company's understanding that focussing on unidimensional performance measures in inappropriate. Very often, bad strategic decisions were made through efforts to increase profit at the expense of other organisational goals.

Based on the above observations, it can be concluded that the Balanced Scorecard features as the most acceptable response to the need for new performance measures supplementing conventional financial reporting with measures of the driving forces of future performance.

3. Balanced Scorecard as a vital management instrument

Balanced Scorecard features as an integrated performance measurement model that enables setting up balance between internal and external relations and processes as reasons for the business subject's financial and non-financial results. The aim of this performance measurement model is to transform the entity's strategy and set performance measures for controlling its planned achievements. In the focus of

its attention are financial and non-financial performance measures, as well as continuous monitoring of the company's short-term and long-term performances, thus providing relevant information for the management when managing the value creation process for the company.

In addition to performance measures of the business subject as a whole, vital importance also belongs to setting performance measures for certain units, functions and sectors, with the aim to enable assessing their contribution to accomplishing the company's global objectives. This is, in fact, a way of securing compliance between the objectives of the business subject and those of its subsystems. More specifically, it aims to set up balance between (McWatters, Morse, & Zimmerman, 2001, p.440):

1. Short-term, mid-term and long-term indicators;
2. Performance and its drivers;
3. Financial and non-financial performance measures and
4. All stakeholders interested in the company's operations.

Harmonising the company's strategic goals with performance measures is influenced by the time horizon of performance measurement. For this reason, the Balanced Scorecard contains short-term, mid-term and long-term performance measures. In this, each of these performance measures is equally important, and none of them should be given priority, as this approach results in inaccurate results. So, for instance, preference for short-term measures may lead to aversion to investments with long-term effect, or involvement in employee training increases short-term costs, while, on the other hand, it makes a positive impact on long-term profits.

Balanced Scorecard is a mix of leading and lagging indicators in every area of management. For example, the number of required employee training hours is the leading performance indicator of employee upskilling, whereas the services available to consumers play the role of a lagging performance indicator.

Establishing balance between financial and non-financial performance is of great importance, as the dynamic business conditions impose the use of performance indicators based on external financial information (share prices), internal non-financial information (production cycle time), or external non-financial information (consumer satisfaction). Actually, nowadays, companies must not rely solely on financial performance indicators, because, unlike these, non-financial indicators provide a broader picture of the company's activities. In this context, traditional financial performance indicators have certain shortcomings from the aspect of their historic character, play a limited role in terms of investing in future management activities, and do not help identify the company's key variables of success. On the other hand, if devised appropriately, the Balanced Scorecard enables feedback, directs and unifies the company's strategic goals with its short-term goals. More precisely, this performance measurement method has four perspectives (Kaplan & Norton, 1996a, p. 76):

1. Financial perspective. Profitability is assessed from the financial management aspect; a company's strategy is viewed with the aim of measuring return on shareholders' investment. In this context, entities in most cases choose a unified indicator as a long-term performance indicator. DuPont analysis was used for these purposes earlier, but nowadays, more sophisticated indicators are used, such as Economic Value Added (EVA), Cash Flow Return on Investment (CFROI), as well as discounted cash flow variations. However, regardless of which measure will be used, a company's economic value is increased in two ways: through income growth and through productivity growth. The income growth strategy focuses on finding new revenue sources through franchises targeted at new markets, new products or consumers on the one hand, and increase in profitability through providing superior consumer value on the other. The productivity growth strategies are oriented to changes in cost structure, due to reduction in direct and indirect costs, and improved asset utilisation through reducing fixed and current assets required for the company's operations. The company growth strategy yields better short-term results, whereas the revenue growth strategy yields long term results. Both of these, however, provide long-term prosperity for the company.
2. Customer perspective. As already mentioned above, value creation strategy is related to providing superior value by choosing one of the three strategies: operative efficiency strategy, consumer partiality strategy and producer leadership strategy. Business subjects preferring the first strat-

egy must focus on price competitiveness, product quality, product choice and just-in-time delivery. Consumer partiality strategy focuses on providing superior consumer service.

3. Internal business process perspective. Kaplan and Norton (the authors of the Balanced Scorecard) categorise all business processes in four groups: innovation processes, customer management processes, operative processes, and processes related to legislative environment (McWatters, Morse, & Zimmerman, 2001, p.440). All of these processes are equally important for each company, and preference for one type of these processes does not automatically mean neglecting the others. On the contrary; every company is expected to fulfil the basic requirements, i.e. meet the basic criteria in their implementation.
4. Learning and growth perspective. This perspective defines three categories of intangible assets required for strategy implementation: strategic competence, referring to staff skills and knowledge required for support the strategy, and strategic technology and organisational climate that will provide staff motivation in accomplishing the planned objectives.

The above presented perspectives do not represent a simple collection of independent perspectives, but there is a logical relationship between them, so, for instance, learning brings about improvements in business processes, which, on the other hand, contributes to increasing customer value, which finally leads to improving financial performance.

This way, though linking the four perspectives, it is possible to abandon the conventional management system, which was short-term oriented, and adopt a new strategic management system, which is long-term and strategically oriented.

Each of the Balanced Scorecard perspectives includes objectives, measures for these objectives, target values of these measures and initiatives defined as follows:

- The key goals to be accomplished – for instance, profitability growth;
- Measures, i.e. parameters to be used for measuring progress in goal accomplishment – for instance, profitability growth is measurable by increase in profit;
- Target values, i.e. specific target values of measures, for instance 2% profitability increase and
- Initiatives, i.e. programmes of activities undertaken with the purpose of accomplishing the set goals.

The Balanced Scorecard was originally interpreted as an advanced performance measurement system. However, it was soon noticed that it could be used as a managerial system when implementing strategies at all organisational levels by supporting the following functions (Kaplan & Norton, 1996b, p. 77):

1. Explaining the strategy – translating strategic goals into quantitative measures, explains understanding the strategy by the management and facilitates consistent consensus development;
2. Communicating with strategic goals. The Balanced Scorecard can transform high levels of goals into operative goals, so as to communicate with strategies within the organisation;
3. Planning and setting goals. Ambitious, but feasible goals are set for each perspective and analysis, and activities are undertaking in their realisation and
4. Strategic feedback and learning – a signal whether strategy implementation is realised as planned, and whether it is successful.

These four functions have contributed to Balanced Scorecard becoming an effective management system for strategy implementation. Namely, the functioning of the Balanced Scorecard as a strategic management systems results in high level of culture change in these organisations, and creating strategy-focussed organisation.

Conclusion

The fifty-year debate on performance management has resulted in the development of various performance measures. Quantitative performance measures are, without a doubt, highly useful instruments. However, contemporary research has shown that their application, indiscriminate support and trust in these measures results in insufficient knowledge of comprehensive effects and consequences for companies' financial performance.

More precisely, contemporary discussions on performance measures impose the need to develop new performance measures that will relate the long-term strategy of a company to its short-term activities.

Dynamic business conditions entail a new method of viewing company performance from several aspects. Namely, it implies setting up a multidimensional performance measurement system, which will provide necessary information on efficient business entity management.

This context gave rise to the development of the Balanced Scorecard, which provides a comprehensive picture of a business, and helps organisations in undertaking activities aimed at accomplishing their long-term goals. SM

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Asset-Based Loan Portfolio Management in Banks

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Abstract
The banks' balance sheets are important for banks, as structural changes directly reflect the balance stability and the banks' profit rates. Balance sheet management involves knowing its structure and relations between the bank's asset and liability items and accounts. It is essential for bank credit managers to manage the bank's loan portfolio and credit principles. It is therefore essential to continually monitor the ranking of the bank's risky assets. Efficient risk management in the asset loan portfolio is based on instruments (or tools) such as credit derivatives, loan securitization, and loan sale. Credit derivatives are found in the form of forward contracts, option contracts and swap arrangement. Securitisation derives from issuing securities based on mortgages on earlier granted loans. Loan sale, i.e. factoring is based on loan participation, novation and assignment between loan buyers and sellers.

Keywords
Bank balance sheet, balance sheet structure changes, loan portfolio, risky assets, credit risk transfer instruments (credit derivatives, securitisation, factoring).

Introduction

A commercial bank's balance sheet comprises the overview of its financial items and accounts, i.e. assets and liabilities, plus equity as a separate source of funds on the liability side. The balance sheet shaping process in important for banks from the risk aspect, as the absolute and structural changes are directly reflected in absolute amounts on the balance stability and the bank's profit amount. The basic identity of a bank balance sheet is expressed by equations:

$$\text{ASSETS} - \text{LIABILITIES} = \text{BANK VALUE}$$
$$\text{i.e.}$$
$$\text{BANK ASSETS} = \text{LIABILITIES} + \text{NET VALUE}$$

The main feature of the bank's balance sheet is related to continuous growth in its on-balance-sheet assets and share capital. Generally speaking, faster growth and larger on-balance-sheet assets (with other positive trends) consolidate balance stability and provide a faster growth in bank profitability. Growth of share capital parallel with the increase in on-balance-sheet assets enables maintaining the bank's required adequacy ratio. Every bank goal includes achieving higher ROE to ROA coefficient compared to competing banks. A significant, if not decisive role in this is played by the application of strategic planning in banks.

The basic sense of planning and compiling balance sheets is the bank's management team opportunity to gain insight into the structure and relationships between asset and liability items, as well as the essence of daily changes, particularly the bank's major business operations and deals. In the first place,

it refers to mobilising various deposits and granting various loans, as the bank's financial reports constantly shows different balances and ratios between the bank's asset and liability items and accounts. Given that banks are profit-centred financial organisations, profit maximisation is achieved based on the optimal volume and structure of funding sources and placements, and maximizing the margin between the levels of their revenue and expenditure levels. (Ćurčić, 2002)

What is important for the bank's balance is its equilibrium and maturity coordination, along with realistic planning of all balance sheet items in terms of operative, tactical and strategic plan (Vunjak, Zelenovic, Birovljev, & Milenkovic, 2012). A bank's balance sheet is in equilibrium if the asset and liability values are in equilibrium in terms of maturity and value. If the bank covers the expenditures with revenues, then its balance sheet, in perfect equilibrium, demands that the default risk be covered by liquid reserves. The balance sheet's maturity coordination guarantees coverage of the bank's illiquidity risk. The exchange rate coordination of assets and liabilities creates the opportunity for covering exchange rate risk arising due to exchange rate fluctuations. A bank's solvency is reported in balances through share capital and provisions, thus achieving stability of the bank's balance and business system (Cockalo, Vunjak, Djordjevic, Besic, & Spasojevic Brkic, 2012). Current data on maturity and structural coordination of the bank's balance sheet is provided by means of accounting and information systems.

1. Structural changes in banks' balance sheets

Balance sheet management in banks involves knowledge of balance structures and mutual relations between items and accounts in the bank's balance sheet. Table 1 the structures of a balance sheet of a medium-sized bank in developed market economy, then the average structure of banks in the Republic of Srpska, and the structure of Nova Banka, Banja Luka.

Table 1 Balance sheet structures of commercial banks

Balance sheet accounts	Banks on developed markets	The banking system of the Republic of Srpska	Nova banka Banja Luka
ASSETS	2010 (in %)	2010 (in %)	2010 (in %)
1. Loan placements	60.0	67.0	65.0
2. Security placements	27.0	1.0	0.2
3. Cash	6.0	25.0	29.0
4. Other assets	4.0	6.0	6.0
5. Liquid assets	3.0	1.0	0
TOTAL:	100.0	100.0	100
LIABILITIES			
1. Time deposits	44.0	32.0	56.0
2. Sight deposits	30.0	40.0	10.3
3. Deposits and liabilities on the money market	11.0	14.0	22.0
4. Share capital	8.0	12.0	10.0
5. Other liabilities	7.0	2.0	2.0
TOTAL:	100.0	100.0	100.0

Source: Authors

The balance sheet structure in developed market economies shows that the asset share structure is as follows: loan placement first (60%), followed by security placements, (27%), cash (6%), other assets (4%), and finally liquid assets (3%) On the liabilities side, the structure is as follows: the leading position is taken up by time deposits (44%), followed by sight deposits (33%), deposits and liabilities on the money market (11%), ending with share capital 8%) and other liabilities (7%). The balance sheet structure shows that the key aggregates on the assets side (loans and securities) are financed from time and sight deposits. Cash is present with only 4%, whereas liquid assets feature with 3%. Share capital is present with 8%, and fixed assets are at the level of 4%.

The balance sheet structure in the Republic of Srpska shows that assets hierarchy is as follows: the highest share is that of loan placements (67%), followed by cash (25%), fixed and other assets (6%), security placements (1%) and liquid assets (1%). On the liabilities side, we find: sight deposits (40%),

time deposits (32%), liabilities on the money market (14%, share capital (12%) and other liabilities (2%). What is noticeable is significant share of cash (25%) achieved by maintaining mandatory reserves, whereas the share of security placements is almost negligible, with only 1%.

The asset structure of Nova Banka Banja Luka does not show greater differences compared to other banks in the Republic of Srpska (Nova Banka, 2010). However, differences in relation to the balance sheet structure of banks in developed economy are present notably in terms of the share of securities in the assets structure of only 27%. The structure of liabilities shows a notable share of time deposits at the level of 56.2%. Another noticeable difference, however, is the lower percentage of share capital than the mandatory level (12%). The size and volume of on-balance-sheet assets and the composition of the bank's balance structure are important due to their effect on the risk (variability of return) and the return (profitability) itself, as shown in Table 2.

Table 2 Implications of the volume and structure of a bank's profit and loss account

The key characteristics of a commercial bank's balance sheet			
Characteristics	**Importance**	**Risk**	**Return**
Smaller volume of fixed assets	Low business leverage level	Reduces risk	Reduces return
Higher amount of short-term liabilities (deposits)	Medium business leverage level	Reduces risk	Reduces return
Higher levels of bank's own funds, i.e. capital	High business leverage level	Increases risk	Increases return

Source: Authors

These implications point to the impact of the managerial decisions made by the bank's management team and the changes in the environment on the risk and the bank's revenue. The following activities are of essence if the bank wants to increase its profitability: (1) increase operative leverage by obtaining a larger volume of fixed assets; (2) reduce liquidity; and (3) increase financial leverage (Sinkey, 2002, p. 28), with reliance on larger assets or reduction in the capital base. Each of these activities will result in changes in the bank's profit, i.e. increased risk. The consistent rule of financial theory on the base rate, i.e. risk/return ratio, states that higher return on investment entails higher levels of risk.

When viewing according to purpose, in addition to asset structure, another important factor is the division of the total assets into productive and unproductive assets. The productive assets of a bank's balance sheets show the share of assets yielding revenue for the bank. Unproductive assets show the share of the segments of assets not yielding profit for the bank. All of these segments of assets, with the exception of the bank's share capital, also generate certain costs on the liabilities side.

More precisely, productive assets are disclosed in the bank's balance sheet and encompass the following accounts: loan placements and security placements. Loan placements generate interest revenue, and security placements generate interest and dividend as the bank's revenues. What is characteristic of unproductive assets is that they do not yield revenue (with the exception of a very small number of cases). The structure of assets, i.e. ratio of productive to unproductive assets within the total assets, is highly essential for any profit-oriented commercial bank.

Table 3 The share of productive assets in the balance sheet

	PRODUCTIVE ASSETS (in %)	31.12.2006.	31.12.2007.	31.12.2008.	31.12.2009.
1.	The banks of the Republic of Srpska	62.3	54.3	59.4 57.4	66.8 61.3
2.	Nova banka Banja Luka	50.8	36.3		

Source: Authors

The presented data show that the positive growth in the share of productive assets over the observed period (with the exception of 2007 and 2008) from 62.3% and 54.3% respectively to 68% for the banking system of the Republic of Srpska, whereas banks in highly developed market economies have the share of productive assets up to 87%, At the same time, the observed period saw a growth in the productive assets of Nova Banka, with similar oscillations in 2007 and 2008. This resulted in a reduction in unproductive assets in both observed cases. Actually, unproductive assets represent the segments of as-

sets that do not yield revenue for the bank, but, in turn, play a functional role in the bank's operations and are mostly "imposed" by the nature of banking, laws and other regulations.

2. Structure and risks of the bank's loan portfolio

Banks form their loan portfolios in order grant loans to applicants from funds accumulated on the liability side, and thus earn interest income. The l0an portfolio is the key segment of the bank's productive assets, whereas revenues from income are the bank's essential source of income. The bank's management and credit team are responsible for shaping the bank's loan portfolio. Practical examples show that credit managers are influenced by the bank's commitment expressed through its credit policies on the one hand, and commitment to leadership on the other. The loan portfolio comprises a group of loans or the total body of loans on the bank's assets side, classified or structured by the bank's management team by types of loan users, such as: (commercial loans, (2) mortgage loans, (3) consumer loans etc. In accordance with the above, a loan portfolio implies the existence of the following elements (1) type and maturity of loans, (2) amount and structure of interest rates, (3) loan security or collateral, and (4) protective clause. (Vunjak, Ćurčić, & Kovačević, 2010)

A bank aiming to meet the needs of its corporate and retail clients with its credit offer, must have all loans of all types, purposes and maturities available in its loan portfolio, depending on what clients expect or want most. This implies not only a broad spectrum of short- and long-term loans tailored for the business community for various purposes, but also various loans for retail clients, such as consumer, mortgage, agrarian etc. loans. The loan offer should be "complete" with the interest rates of various amounts and types, particular conditions of providing loan repayment security (such as downpayment, deposit, collateral etc.). In addition, the bank has the obligation to include appropriate protective clauses in the placement contracts, as they are in fact borrowing and placing others' assets.

What is characteristic of loans is that they range among high-risk bank operations. Banks will be successful in loan operation as long the assessed risk is realistic and controlled within defined limits. The decisions whether to grant the loan or not are a matter of the credit manager's personal assessment, and are made in the context of the bank's overall policy and parity between the bank's profitability and liquidity. Before making a specific decision, one should bear in mind that no loan is risk-free, and not bank would be capable to conduct its operations continuously if it did not grant risky loans as well. One should therefore bear in mind principles classifiable in two groups: (1) the seven principles pertaining to the lenders and (2) the eleven principles pertaining to future borrowers. (Hale, 2000)

Principles to be appreciated by the bank as the lender refer to the facts that:

1. The quality of the loan should be more important than using a new opportunity;
2. Each loan should have two independent and non-coexistent outcomes;
3. The character of the borrower, or the corporate client's manager and shareholders should be beyond doubt, as well as their integrity;
4. If the deal is unclear, loan for it should not be approved;
5. Whether the grant the loan or not is the bank's own decision, and they should feel it in conformity with their own assessment;
6. The purpose of the loan should contain the basis for its repayment;
7. If all the relevant are present, one need not be a genius to make the right decision on the placement of loan assets.

Principles to be appreciated by the borrowers refer to the facts that:

1. Business cycles in companies must be consistent;
2. The assessment of the company's management team should be more vital than in the case of assessing financial reports;
3. The security of collateral cannot be a substitute to loan repayment;
4. When taking securities, it is important to obtain a professional and impartial opinion on their value and marketability;
5. Granting loans to minor applicants is riskier than granting loans to large-scale applicants;
6. When considering loan approvals, more attention should be paid to detail, given that the loan adminstration may make a "healthy" loan seem insecure one way or another;

7. Local banks shoud be oriented as participants in supplying loans to local applicants;
8. If an applicant wants a quick reply, it should always be "no";
9. If the loan has to be guaranteed, than the guarantor's interest should be verified as well as the applicant's;
10. When approving loans, the management first carefully consider where to use up the bank's credit potential;
11. The bank should be thought of first, given that risk tends to grow when established bank loan principles are breached.

As institutions, banks are subject to twofold risk: deposit disposal risk and loan collection risks. Credit risks include (Vunjak, Zelenović, & Ostojić, 2011, p. 3): (1) asset borrowing risk, (2) collection risk, and (3) loan disbursement risk. Bank should therefore constantly classify the riskiness of all the accounts of their assets, in five categories (A, B, C, D and E) (Vunjak & Ostojić, 2011, p. 6).

Table 4 Risky asset categories (according to regulations of the Republic of Srpska)

Risky asset categories	Provision levels in %
Category A: Good assets	2
Category B: Marked assets	5-15
Category C: Substandard assets	16-40
Category D: Bad assets	41-60
Category E: Loss	100

Source: Authors

Based on the asset classification presented above, the bank must form provisions for credit losses, so that these provisions serve as the first line of defence from unexpected losses. The bank's second defence line refers to current earnings. The third line of defence refers to retained earnings, and the fourth line refers to the bank's share capital. If the fourth defence line is "broken", it means bankruptcy, that is, its liquidation as an economic entity. To avoid or minimise loan portfolio risks, they must be diversified into (1) credit concentration risks, (2) sectoral (geographic), and (3) risks of loans to associates. However, some authors argue that there is a broader scale of risks related to loan approval. According to E.I. Altman, the principal risk categories related to the function of commercial crediting are (Altman, 1995, p. 483): (1) credit risk or loan recoverability risk; (2) investment risk or interest rate risk); (3) loan portfolio contribution risk; (4) operational risk; (5) fraud risk); and (6) loan syndication risk.

A special role in credit risk reduction should be played by profitable interest rates. Actually, a profitable interest rate agreed for a loan should compensate the bank for two obvious cost types (Flannery, 1995, p. 459). First, the interest rate on loan should successfully cover the time value of financial assets. Second, the interest rate on loan should include premium over pure interest rate, so as to compensate the possibility of incomplete loan repayment.

Loan interest rate premium can be divided into two categories (1) default premium and (2) risk premium. Default premium covers the expected creditor's risk on approved loan. Naturally, no creditor should approve a loan to an applicant unless it anticipates repayment on time in full, nor should a single loan officer be confident of total credit collection. The usual type of loan analysis is broadly oriented to inferring probability that some of the applicants will be unable to fully repay the disbursed loans

The second component of loan interest rate relates to risk premium. Risk premium compensates the creditor based on uncertainty of what proportion of loan will be repaid. Such loan premium (above expected loss) is required to encourage creditors to avert risk, granting higher-risk loans instead of focussing exclusively on risk free treasury bills. Practical experience has shown that two different factors determine the appropriate risk premium (a) first, the degree of creditor's aversion to risk and second – the structure of other assets in the loan portfolio.

The basic concept of asset-oriented loan portfolio managed is simple, as the whole (or part of the) credit risk is based on hedging costs. Aspiring to develop a business entity and enter an attractive business deal, or lend money to a client deemed to generate high income through other activities, a business entity must pay hedging costs for each transaction, as well costs related with their operations. Several trends on the financial market are believed to reflect the growing benefits of asset-based loan portfolio. (Bohn & Stein, 2009, p. 18) There are several reasons for accepting this fact. First, analyses of several

banking crises shed light onto the most common cause of the bank crash, namely, over-concentrated bank loan portfolio. Second, development of credit derivatives, such as credit default swaps and collateralised debit obligations present new tools for portfolio diversification management. Third, financial institutions managing their loan portfolio have historically performed more efficiently amid economic changes over time. Fourth, emphasis on asset-based loan portfolio stems from reflecting on banking with the following respect: *bank managers should make decision maximising the value of the bank's shares and equity* (Vunjak, Zelenović, & Ostojić, 2011, p. 7)*, rather than only focussing on maximising the assets in the bank's loan portfolio.*

3. Loan risk transfer instruments

In order to manage risk in the asset-based loan portfolio more flexibly and efficiently, instruments or tools have been developed for transferring certain types of risk, such as (1) credit derivatives, (2) loan securitisation and (3) factoring. These tools enable transforming bank loans to intermediaries' accounts from initial maturity to marketable securities. (Resti & Sironi, 2007, p. 217)

Credit derivatives in the form of forward contracts, swaps and option started developing in early 1990s, and with the involvement of loan risks, they became known as credit risk transfer tool. These instruments are very common, traded on the open market (OTC) and present on the financial market in substantial amounts. Their primary users are banks, institutional investors and large non-financial companies. There are several elements and technical concepts, which are most characteristics of all credit derivatives. The first element refers to underlying assets, then reference entity such as a company, a public institutions or sovereign state, which is involved in the risk and to whom the credit risk must be transferred by using a derivative contract.

Payment based on a credit derivative is related with the credit events defined by ISDA, in other words, deteriorated creditworthiness of the entity. A credit derivative can cover one or more such events. The most common contrast types are: (a) credit spread forwards, (b) total return rate swaps, (c) credit default swaps, (d) credit spread options and (e) credit default notes.

Credit derivatives enable banks to reduce credit exposure for a contracting party without the need to factor the relevant contract, or earn commission in exchange for credit risk exposure with whom they do not have a direct client relationship. This enables banks to increase the liquidity of these loans, optimise the loan portfolio, and improve its efficiency in terms of return on assets.

Securitisation entails the process of business orientation to issuing, purchasing and transferring securities at a larger scale than in the case of classical loan-and-deposit banking. Securitisation is, as it were, the process of unifying and "repackaging" loans into securities, which are already sold to buyers on money markets. (Graddy & Spencer, 1999, p. 63) A higher share of securities in the bank's balance sheet is one of the ways of enhancing the balance structure and establishing satisfactory relations between revenues, expenditures and risks in the conditions of high debt burden and stretched balance sheets of commercial banks. Each creditor has the goal to use bank securitisation and achieve a better structure of placements, thus increasing the liquidity level of its own balance sheet. On the other hand, debtors use the same strategy to improve the structure of their funding sources, reduce the debt pressure and establish better revenue to expenditure ratio. (Ćurčić, 2002, p. 22)

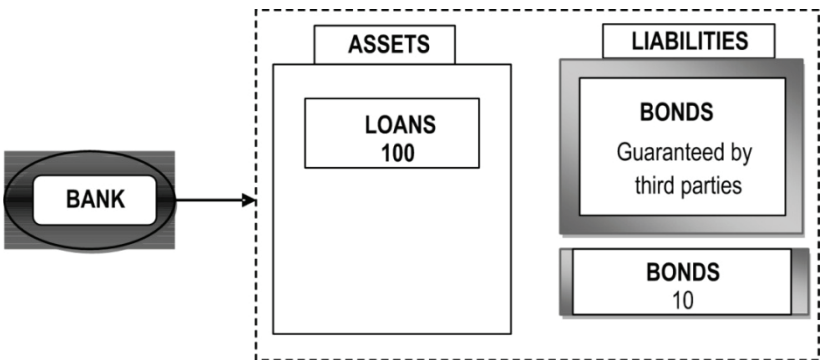

Figure 1 An example of simplified representation of securitisation procedure
Source: Authors

Characteristically, banks can improve their loan portfolio without using loan derivatives, simply by applying technique known as securitisation. This process implies involving a certain ad hoc chosen company that buys a part of bank's assets usually allocated to loans.

In the late 1970s, there were standard practices in the USA of banks selling their loans as a whole, or directly as a group of loans. A secondary loan market was thus created and developed over the past few decades. The main forms of loan sale, i.e. factoring, are (1) participation, (2) assignment and (3) novation. Participation is actually not a loan sale, as the loans remain in the ledgers of banks that sell loans. Instead, the bank calls the loan "buyer" to form a deposit at the "seller" bank at the loan amount value. The bank remunerates the deposit based on the received amount of the "sold" loan. Assignment implies actual transfer of loan from the seller to the buyer. This way, however, obligations are not transferred from the loan seller to the loan buyer. Novation is the procedure when the original loan is annulled and replaced by an identical loan owned by the new creditor.

Conclusion

1. Loan portfolio is the key segment of productive assets in a bank's balance sheet, whose share exceeds 60% of the total assets.
2. It is a characteristic of a bank to earn interest revenue based on granted loans, as the largest portion of every bank's revenue. Interest revenues exceed 80% of the bank's total revenue.
3. Loans are highest-risk accounts in the bank's productive on-balance assets, and it is therefore of essence to protect the bank from credit risks. This is achieved with various measures, both preventive (by preventing loss) and actual (by covering incurred losses with funds allocated for this purpose).
4. Preventive measures encompass various forms of diversification, such as preventing the occurrence of higher credit risks, sectoral (geographic) risks and credit risks of the bank's associates. As for allocation and formation of funds for loss coverage, the bank forms reserves for credit losses based on assets classification, as the first line of defence against unexpected losses. The second line of defence comprises current earnings, the third line contains retained earnings, while the fourth line consists of the bank's share capital. When the fourth line of defence cannot be protected, the bank goes bankrupt, and is liquidated as an economic entity.

Asset-based loan portfolio management implies the use of particular instruments or tools for neutralising those credit risks. These tools are credit derivatives, securitisation and loan sale, i.e. factoring. SM

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Model of the Preferred Organizational Culture

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Abstract
Today there are various models and measuring instruments available to many studies of organizational culture designed for its investigation, but there is still no consensus concerning the definition, levels, generic dimensions and a general scale for measuring organizational culture. Studies by various authors in the field of organizational culture and facet culture offer specific evidence of the significant impact of these variables, but the important question remains in the domain of advice for the recommended, excellent, the best organizational culture of business organizations, which will direct the practices and attract the attention of businesses community and management in the processes of creating and maintaining competitive advantage. Research of that desirable culture is the main goal of this paper. It offers a model focused on the desired organizational culture of business organizations, and is named The model of the preferred organizational culture. The model was made on the basis of a series of theoretical studies and taking into account the best business practices. A measurement scale based on this model served for an empirical study of the organizational culture of large and medium-sized enterprises in the Republic of Croatia, and the presented result at the level of 73% out of 100% points to the conclusion that there is still much to be done for managers and organizations in this area. In addition, different elements of organizational culture have been established in which the company showed above-average value (the relationship with the environment, communications, artifacts, etc.) and those in which their level of organizational culture is below average (innovation, action, tolerance, flexibility, organizational climate, etc.).

Keywords
Organizational culture, model, medium and large enterprises, the preferred organizational culture.

Introduction

The environment of business organizations is in a continuous process of change, with present lateral and swirling motion, i.e. turbulence (the term "turbulent environment" was modeled after the turbulence and dissipation in liquid media), so there is a continuing need to redefine the relationship with the environment. It is necessary to provide a strategic dimension and major priority to the problem of internal integration and external adaptation, otherwise not only will the organizations fail to achieve goals, but even their purpose may be questioned in the long run.

In the race for sustainable competitive advantage, successful winners are those who understand and anticipate the time, those who are immersed in the future and who successfully manage: real intellectual capital, the ability of continuous and rapid innovation (particularly in the field of operations), creativity and adaptability, and permanently generate sustainable competitive advantage. In doing so, their governance structure and management are a match for the requirements of time, work and life, so that they are able to successfully coordinate the system and lead changes in the preferred direction and, in terms of dynamic capability, prudently manage external and internal resources and competences. In other words, the winners are those who have, create, maintain and use an unprecedented resourcefulness on the level of tacit knowledge and skills, imagination, intuition, creation, and nonlinear logic and they have immanent entrepreneurial, creative and desirable organizational culture in addition to being able to keep a constant gap between their leading competitive advantage and the position of other players.

As an expression of organizational identity, organizational culture in these processes has an increasingly important role: it affects the development of the organization and its strategic management directly through the mission, vision and management style. An additional influence is with the senses of an inaccessible level (basic assumptions, shared values, unwritten norms, etc.), so that it is expressed as a specific segment of the inner (internal) environment, which represents a link between resources and the transfer agent linking the internal and external business environment. By preserving and storing all former and current information about the relationships and actions, along with interactions with the environment, it is the input and inevitable variable of all processes and outcomes of the organization (Rudelj, 2010). Organizational culture constitutes a complex of learned, certified and standardized methods, rules and routines for identifying, defining and solving various problems in the organization, which result in a system of behavior of individuals and groups working in the organization, as well as the behavior of the organization as a whole and its outcomes. It is the cohesive force (created on the basis of common: work, understanding, values, assumptions, living and doing business) that routinises performance of the business system and most often works against its abrasion; thanks to its power of self-organization and encouragement, it simultaneously affects the functioning and performance of business organizations. The question is: Is it possible to recommend an organizational culture and which organizational culture is desirable for a business organization? This research is based on the hypothesis that it is possible to define the model of the preferred organizational culture for business organizations.

1. Organizational culture

The fact that every business organization has an organizational culture has not always been accepted and exploited, so its importance and role have been subject to change. From a situation in which the organizational culture was completely marginalized and unknown, this process came to the point of inflection in terms of a rapidly increased interest in organizational culture. The soft variable of enterprise organizational culture comes into focus of interest due to the social conditions of the 1980s, such as: changes in social values; problems of sustainable development (a term introduced by the United Nations in 1986), energy consumption and environmental issues; decline in the competitiveness of the US economy and the superiority of Japanese firms (due to better effect with a similar technology, it was concluded that the reason lay in the specifics of the oriental Japanese culture); shifting organizational focus to performance and economies of scale; turbulent business environment; the process of globalization; etc.

The construct organizational culture appeared about 30 years ago, around the same time as postmodernism (introduces individualism with autonomy of happiness, liberalism, new hedonism, feminist ideas, etc.). The origins (1916) can be associated with Fayol`s Esprit de corps, which he cites as the fourteenth principle and element of administration (Fajol, 2006). However, the first who investigated organizational behavior (and thus the organizational culture and/or its segments and elements, such as organizational climate) was E. Mayo and his associates. The study of organizational culture did not undergo full initialization followed by real momentum until the 1980s. First, there was movement in the direction of inducing theory from case studies and research papers (Pearse & Kanyangale, 2009). The foundation are studies published by: Petigrew (1979); Ouchi (1981); Schein (1981); Peters and Waterman (1982); Pascale and Athos (1982); Deal and Kennedy (1982); Hofstede ("Cultures Consequences", 1980) founded research on the role of national culture (as cited in Rudelj, 2011). In modern conditions, it is possible to identify a complete reversal, i.e. a situation in which organizational culture is imposed as a predictor, an independent variable of the company so that it is now justifiable to talk about the cultural paradigm of the company. Recent (numerous and voluminous) research provides evidence of the impact of organizational and facet culture on the essential elements of the functioning of business organizations (Rudelj, 2011). It has been shown that organizational culture significantly affects organizational development, i.e. that it is the most important factor in the development of the company (Protecea & Cebuc, 2009), which is connected with the fact that it can be a unique source of competitive advantage (Carpenter, Bauer, & Erdogan, 2010; Xu, 2009; Tureac, 2005), primarily through the originality (uniqueness, authenticity) of an organization. An organization's culture is closely linked with the performance of the organization (Yazici, 2008; Denison & Mishra, 1995) and has economic implications for the company (Kangas, 2009; Barclay, 2010). In addition, organizational culture is a prediction variable for excellence in the way that "appropriate communication structures, interpersonal relations, moti-

vation and incentives, as part of organizational culture, positively affect operational excellence in companies" (Štok Meško, Markić, Bertoncelj, & Meško, 2010, p. 303). Some researchers have gone a step further, speaking of the global culture of excellence (Lazibat & Samardžija, 2010), implying that the concepts of culture and excellence are merged, which is a favorable view of their interrelation.

The complex relationship with learning is also characteristic of organizational culture, because it is a factor of learning in organization, influences the success of learning (Schein, 1996), but is also the result of learning of individuals, groups and organizations. The most important thing is that learning is common and long-term. The learning ability of the organization and its potential for learning depends on the organizational culture. Organizational learning is important for gaining competitive advantage (Coulter, 2010; Bahtijarević-Šiber, Sikavica, & Pološki Vokić, 2008), which is a prerequisite for survival and sustainable development of an organization. In doing so, organizational culture is the mediator of changes: it has an impact on establishing the need for change, determines the choice of a new organizational vision, facilitates coordination and teamwork, and encourages the identification process (Šapić, Erić, & Stojanović-Aleksić, 2009). In the implementation of organizational changes (including strategic ones) culture plays a role as texture of the organization and control network, and without its changes new forms and structures will hardly be carried out. Organizational culture is an element of cohesion and a catalyst for internal connection and adaptation to the environment. Frequently used metaphors are that it represents in the organization: an integrator and regulator of social relations (Alvesson, 2002), organizational glue, organizational justice, source of organizational satisfaction. It has an important effect on employees and their behavior: influences perceptions, value systems, doings, affects the spirit and consciousness of each employee (Shieh & Wang, 2010), and even their motivation.

1.1. Levels and generic dimensions of organizational culture

Characteristic of the construct of organizational culture is its multifaceted nature and the existence of multiple levels, which are governed by specific relationships and dynamics. Most of the authors mentioned assumptions, values, behaviors and artifacts as levels of organizational culture, but there is no consensus concerning the number of levels, so different authors have performed a variety of classifications and different typologies (Figure 1).

Author/ Level	Kilmann	Dyer	Kundu	Schein	Sathe	Trice & Breyer	Hofstede	Molina	Ott
Shallowest level		Artifacts		Artifacts			Practice	Materiality	Artifacts Behavior
	Behavioral norms		Behavior		Samples of organizational behavior (not culture)	Norms		Behavior	
		Perspectives	Attitudes				Values		
		Values	Values	Values	Validity of behavior (not culture)	Contents			Va-ues
The deepest level								Values	
	Hidden assumptions	Assumptions		Assumptions					Assumptions
								Common basic assumptions	
	Human Nature				Assumptions, (including beliefs and values)				

Figure 1 Different typologies of the levels of organizational culture
Source: adapted by Rudelj, 2011, p.70

There is also no consensus among researchers on the definition, measurement instruments, and even the generic dimensions of organizational culture, in other words, a set of key dimensions that are able to describe and compare the organizational cultures of a wide range of organizations. One approach to the generic dimensions is in Table 1.

Table 1 Generic dimensions of organizational culture

Generic dimensions of organizational culture: *orientation toward the people, innovation, orientation towards outcomes; bureaucratic orientation*	Measuring instruments for organizational culture	The authors of the measuring instrument and year of publication
A) Values (level)		
Respect for people, team orientation, stability, innovation, orientation towards outcomes, aggressiveness, attention to detail	1. Organizational Culture Profile (OCP)	O'Reilly, Chatman, Caldwell, 1991; Sheridan, 1992
The need for security, focusing on the work, the need for authority	2.Hofstede - Values	Hofstede et al., 1990
Solidarity, internal cooperation, personal involvement, inclusion and know-how, the authority of performance changes	3.Calori & Sarnin	Calori & Sarnin, 1991
Culture of support, innovative culture, bureaucratic culture	4.Organizational Culture Index (OCI)	Litwin & Stringer, 1968; Wallach, 1983
Value of people, innovation, being the best, growth / income, attention to detail	5.Organizational Beliefs (OBQ) Questionnaire	Sashkin, 1984
Individualism / egalitarianism, acceptance / opposition of task, dominance / obedience	6.SYMLOG	Poumadère, 1985
Support, innovation, goals, policies	7. Competing Values Model - Focus 93 – (evaluation part)	Several authors
B) **Patterns of** behavior (level)		
Task-driven culture, people culture, of security-driven culture, culture of pleasure	1. Organizational Culture Inventory	Cooke & Lafferty, 1989
Employee orientation vs. results orientation, the orientation process vs. results	2. Hofstede-Practice	Hofstede et al., 1990
Technical concerns, caring for people, short-term orientation, long-term orientation	3. Culture Gap Survey	Kilman-Saxton, 1983
Cohesion morale, human resources, stability, flexibility, productivity, planning	4. Competing Values Model	Rohrbaugh 1991
Group culture, developmental culture, rational culture, hierarchical culture	5. Competing Values Model	Quinn & Spreitzer, 1991
Support, innovation. objectives, policies	6. Competing Values Model - Focus 93- (descriptive part)	Several authors
Tasks vs. social concerns, individual vs. collective decision-making, cooperation vs. competition, security vs. risk, stability vs. innovation (external vs. internal focus), an informal vs. formalized procedures	7. Reynolds	Reynolds, 1986
Helping and caring for others, success	8. Comparative Emphasis Scale	Adkins, Ravlin & Meglino, 1996
Integration / communication, development and promotion, honesty of rewards, innovation / risk taking, clarity of strategy / shared objectives, orientation to action	9. Survey of Management Climate	Gordon & DiTomaso, 1992
Collegiality / collaborative relationships, teamwork / communication, training / development, innovation / creativity, performance / excellence, profitability	10.Organizational Norms Opinionnaire	Alexander, 1978

Source: By author, based on Delobbe, Haccoun, & Vandenberghe, 2002, pp. 3-6.

The authors of ECO instruments have studied the core dimensions of organizational culture (Table 1), identifying the generic cultural dimensions based on the measurement questionnaire (20 existing), and have discovered and developed four summary dimensions (orientation toward people, innovation, orientation towards outcomes; bureaucracy) and selected measurement focuses through the matrix of 2x2 (on the levels of organizational culture: a system of values, norms of behavior).

1.2. Modern trends in the organizational culture of business organization

In terms of research, organizational culture is an extremely complex and multi-layered construct. It is certainly a unique and very complex phenomenon immanent to business organizations with connections primarily in the direction of determining the identity of the organization and interaction of stakeholders.

The organizational individual, as the basic material element of the organization and as a cultural, psychological, political and social being, has also experienced changes in the roles within business organizations, according to large scientific, technological and socio-economic alterations. From simple labour and hireling through a machine operator, an employee in the business organization has become a carrier and controller of knowledge and skills. In this way, actual, mechanical characteristics conceded dominance to psycho-social components of individuals. Characteristics of the individuals largely inaccessible to the senses have become an important source in the organization of sustainable competitive advantage of business organizations (the organization is somehow extraordinary, possesses something that others do not have and / or is doing what others cannot, or is better at something than others), so that the psychology (of the individual) and sociology (of the group) are unavoidable scientific and technical disciplines. In modern business, the employees are the foundation of well-designed business processes, the catalysts of customer satisfaction and continuous sources of possible dynamic strategic capabilities of the organization.

Organizations and the people in them are in constant interdependence, often in a creative state of disorder and conflict. This internal interaction, relationships and integration is particularly directed by organizational culture and management of the organization. Key resources and core competences of the organization have changed over time. Former companies highlighted the tangible assets and the economies of scale (size, quantity, location, etc.), stability, certainty and short-termism. Today, people with a new role (with predominantly mental work) and a developed awareness are the main resources of organizations and they directly affect outcomes and organizational development. People are increasingly involved in working and business transactions of organizations in a new way: information is an important resource; through telecommunications, through smaller highly motivated working units, flexible working conditions, an environment that emphasizes creativity and an increase in the autonomy of employees (Berryman-Fink & Fink, 1996, p. 198). In parallel with these processes, the role of organizational culture is growing in importance because it is becoming the dominant connective tissue (Sikavica, Bahtijarević-Šiber, & Pološki-Vokić, 2008, p. 449) in the new decentralized and atomized organizational structure. Organizational culture is in an ongoing interdependence with the strategy and architecture of today's organizations and the challenges of modern management.

The important challenges of modern management in the 21st century are stated as: business and managerial ethics, social responsibility, an organization that learns and manages knowledge, women in management, managing diversity (Bahtijarević-Siber et al., 2008). There is a variable that affects all these processes, especially organizational culture, as a specifier; it is the turbulent development of informational, communicational and technologies in general in combination with the development of science and knowledge, followed by globalization, general competition, strategic alliances and cognitive changes of human resources. The role of managers in modern conditions is similar to a crew of navigators sailing into the unknown, for whom the instruments and maps are models of excellence that give them some clues, the most critical part of it (the software tab, added by S.R.) being immaterial, and the most important feature are shared values of organizational culture (Conti, 2010, p. 888). Management must first generate intrinsic motivation and harmony of orientation as well as a context for the strategic intention of the company.

Contemporary changes are moving in the direction of the transition from a bureaucratic to a new organization and culture of adhocracy (Sikavica et al, 2008). The concept of adhocracy belongs to modern theories (Deutschmann, 1995), and is followed by heterarchies and the process approach, while traditional culture is slowly being replaced by a different, contemporary culture. Such current cultures are usually designated as: team culture, creative, entrepreneurial, innovative, organic, adhocracy culture, culture of heterarchies, etc. An acceptable term for a type of modern culture would be suitable culture that is opposed to the traditional, undesirable, ancient culture. If the problem is accessed generally, we can discuss desirable organizational culture, and various requirements can be pointed out under this term that theory and research and also practice of modern successful business organizations have given rise to.

The concept of ideal culture, which should primarily describe the best, flawless, perfect culture (which in fact exists only in consciousness, and which is illusory and ostensible), is associated with the normative theory and the ideal type. However, if this culture had to be described, it might be said that the ideal culture is characterized by a clear assumption of capital and a sense of collective capability in addition to a disposition to constantly apply the collective skills to new situations (Wilkins & Patterson, 1985, p. 272, as cited in Alvesson, 2002), and the potential for change. It is obvious that the perfect, ideal culture does not exist, because for each specific organization the situational factors and characteristics should be examined. However, according to Cooke and Lafferty, there are six elements that make an ideal culture which should be respected: innovation, autonomy, skill development, trust, open communication and flexibility (Hemmelgarn, Glisson, & James, 2006). There is in fact a description of the desired organizational culture, but it is erroneously called ideal. Although one cannot say that there is a universal recipe and model of culture that is acceptable to all organizations (ideal culture), based on theoretical models and research practice, some guidance in terms of desirable characteristics of an organization and its culture may be given. So, in the case of this organization, it is more advisable to speak of the appropriate culture.

In discussing organizational culture and desired culture, which can cause and/or catalyze the process towards excellence, the issue of the normative type is interesting and intriguing, because in some way it enters the field of attributes of perfection. Excellent cultures enjoy a strong identity because they have a corporate culture that makes them unique (Conti, 2010), which confirms the fact that this originality represents a resource and can be a source of competitive advantage for the company. If we add the time dimension, we have a better connection between the normative and practical experience.

Studies have confirmed that creative and entrepreneurial culture contributes to excellence (Peters & Waterman, 1982; Ansoff, as cited in Sikavica et al., 2008) and are characteristic of modern successful businesses. Creative and entrepreneurial culture is characterized by: action, openness to new efforts in creating the future, external, environmental and market orientation, decentralization, and lowering of power and authority, experimentation, tolerance of mistakes and failures, employee autonomy, internal competition, creativity, confidence and informality, focus on success and results, creative atmosphere geared to the constant changes of the existing and creation of the new (Sikavica et al., 2008).

One of the concepts of desirable culture and recommendable changes, created on specific research of companies, states that the necessary orientation of the enterprise is on: action, consumers, businesses, people, values, success, uncomplicated organization, simultaneous combining of the external and the internal (Žugaj, 2004). The idea of the seven dimensions of organizational culture emphasizes the following elements: innovation and risk, attention to detail, orientation to results and outcomes; people orientation, team orientation, aggressiveness and stability (Robbins & Coulter, 2005), and it was pointed out that each dimension ranges from low to high (typical / atypical of culture).

Although the term "new culture" is used for modern organizational culture (which would include revolutionary changes in organizational culture), periodisation and intertwinement in terms of old and new organizational culture is conditioned by logical incrementalism, evolution and continuous culture change in a business organization. With respect to the aforementioned, it is naturally interesting that the author is concentrated on organizational culture as it should be in terms of desirability, benefits and contributions to a business organization. Such a preferred organizational culture is good for the organization and represents a source of competitive advantage.

1.3. The model of the preferred organizational culture

Based on a series of studies related to organizational culture and factors that positively affect the performance of business organizations one can perform a differentiation and identification of the organizational culture that is in general desirable or preferred for a business organization. Basic aspects, features and distinguishing characteristics of the preferred organizational culture model are shown in Tables 2 and 3.

Table 2 Preferred organizational culture (Part I)

Elements of comparison	Undesirable organizational culture	*Preferred organizational culture*	Source (adapted and customized according to):
The role of people	People are resource and cost	People are capital, assets and sources of knowledge	Srića, 1994; Bahtijarević-Šiber, 1999
Attitude towards people and their role in organizations	Mercenary attitude - paid for everything they do and do not work, individual is the less important element	Creative abilities of people are recognized and respected, performance and competence of individuals are respected	Robbins, 1995; Žugaj, 2004
Investing in people (e.g. education)	Investing in people represents expense and it is often not necessary (people are replaceable)	Investing in people is a necessary investment and produces results with a time lag	Bahtijarević-Šiber, 1999
Freedom of communication	Communications are set and monitored	Communications are free and networked	Robbins, 1995; Hemelgarn et al., 2006
Way of communication and the intensity of certain modes of communication	Orders are oral, written or by telephone, the transmission of feedback information is personal, by mail or telephone	Especially intensive: electronic pathways (telephone, e-mail, intranet, internet CMS, video-link, extranet, SMS / MMS, etc.) and discussion	Rudelj, 2011
Relations between people	Competition and culture of roles	Intimacy and mutual respect are preferred	Bahtijarević-Šiber, 1999
The excellence of the individual	Formal education, obedience, uniformity, conformity are appreciated	Knowledge, competence, excellence, diversity and innovation are especially appreciated	Robbins & Coulter, 2005; Sikavica et al., 2008
Typical artifacts OK in the field of process and a sense of significance	It is important for the company to have many employees and a large location (range)	Disposal of enterprises with modern technology and techniques, and the arrangement of objects	Sikavica et al., 2008
Control	Conventional monitoring the extent of the role of supervisors	Self-monitoring and self-discipline (the ability of input, process and use of information is important)	Žugaj, 2004
The basis of functioning of business organizations	Formalized organizational structure, constraints and a system of rules and sanctions / standards	Based on the values (accountability on all levels of an organization and team discipline)	Bahtijarević-Šiber, 1999
Concentration of power	Centralization	Decentralization	Žugaj, 2004
Tendencies of organizational design	Complex structures, a large administration	Streamlining of organizational structure and reducing administration	Žugaj, 2004
Flexion of the organization	The rigidity of the organization	The flexibility of the organization	Rudelj, 2011

Source: Prepared, adapted and edited by the author. Made based on multiple sources (Column 4).

Table 3 Preferred organizational culture (Part II)

Elements of comparison	*Undesirable organizational culture*	*Preferred organizational culture*	Source (adapted and customized according to):
Relation to novelty	Maintaining the status quo	Encouraging the innovation, a positive attitude towards new ideas	Weinzimmer, Franczak, & Michel, 2008; Hamel, 2009
The independence of the employee	Supervision of employees	Autonomy of employees	Hemelgarn, et al., 2006
Characteristics of managers	Managers are senior, experienced, and strict and command-oriented	Coordinators, trainers and consultants teams (cooperative and competent)	Srića, 1994; Peters & Waterman, 1982
The working atmosphere (loyalty, bosses, salary)	Employees are loyal to a certain extent, the bosses are not beloved, salaries should be higher	Employees are loyal to the company and content with bosses, job and income	Bahtijarević-Šiber, 1999
Empowering employees	The rights and decision–making of employees dictated by managers	Employees have the freedom to decide on the basis of knowledge and skills	Randolph & Sashkin, 2002
The identity of the employee	People prefer to identify with a particular group	People prefer to identify with the organization	Robbins, 1995
The success of the company	The only important achievement is the achievement of the company	The company is a set of successful individuals	Robbins & Coulter, 2005
Action, and risk tolerance	Deflections from uncertainty and error, gradual action	Tendency to take risks and tolerance for mistakes, action and experimentation	Weinzimmer et al., 2008; Žugaj, 2004; McKinsey, 2011
Learning at work	Individuals are subject of learning	The learning organization-collective learning	Buble, 2009
The importance of ethics	Importance of the success of the organization	Ethics is even more important than profit	Rudelj, 2011
Attitude towards the environment	Legal Notice	The moral and legal responsibility	Rudelj, 2011
Teams, teamwork and common goals	Individual navigation	Employees have common goals and they believe in shared values so the teamwork is foundation of the company	Robbins, 1995; Žugaj & Schatten, 2009
General orientation standards and guidelines	Standard oriented culture, focus on processes, procedures, formalism and maintenance	Value oriented culture (mission, vision, clear goals and performance standards) and success	Heller, 2010; Sikavica et al., 2008; Siropolis, 1995

Source: Prepared, adapted and edited by the author. Made based on multiple sources (column 4).

A different, new and desirable organizational culture as a summary term for an adequate and modern organizational culture is based on a series of ideas: the value orientation; teamwork, customer awareness, orientation on goals, performance and success, flexibility, excellence, accountability and commitment, innovation, independence, creativity, and coping with bad outcomes, competency of staff and managers, employee empowerment, decentralization, and uncomplicated organization (structure), free flow of information and use of all sorts of information and communication channels; orientation on people and knowledge management, social sensitivity, etc. The preferred organizational culture is associated with a dynamic organic information organization, where human resources and organizational culture play an important role.

Based on the components of the preferred organizational culture, it is possible to construct a model of the preferred organizational culture (Figure 2). This model, along with the corresponding measurement scale, can be used for the study of organizational culture in business organizations.

Figure 2 Model of the preferred organizational culture
Source: Author

2. Empirical research

2.1. The study sample

The representative stratified sample comprises 306 medium and large enterprises randomly chosen in the Republic of Croatia. The instrument of research with the measurement scale of the preferred organizational culture (appendix) contains 15 items, Likert-type assessment scale (the range on the scale is 1-5; items 14 and 15 according to the model of two items from the measuring scale OCAQ). Respondents were managers, professionals and employees in companies that entered the sample, and valid questionnaires were returned by 124 large and medium-sized enterprises in Croatia (n = 124). The description of the sample and the basic set according to corporation (according to the NKD 2007) and to company size are given in Table 4.

Table 4 The size and structure of the population and sample size (medium and large enterprises active in the Republic of Croatia on July 2, 2010, according to NKD 2007)

Fields	Names of activities (according to the National Classification of Activities - NKD 2007), valid in the Republic of Croatia	Large companies - Number of active firms	Sample - number of activities large companies [14,03%]	Medium companies - Number of active firms	Sample - number of activities large companies [14,03 %]	Large and medium companies - Number of active firms	Sample - number of active large and medium companies [14,03 %]
A	Agriculture, Forestry and Fisheries	10	2,00	51	7,00	61	9,00
B	Mining and quarrying	5	1,00	16	2,00	21	3,00
C	Processing industry	131	18,00	480	67,00	611	85,00
D	Electricity, gas, steam and air conditioning	9	1,00	15	2,00	24	3,00
E	Water supply, wastewater treatment, waste management	10	1,00	78	11,00	88	12,00
F	Construction	47	7,00	200	28,00	247	35,00
G	Wholesale and retail trade, repair of mot. vehicles and motorcycles	114	16,00	478	67,00	592	83,00
H	Transportation and warehousing	28	4,00	71	10,00	99	14,00
I	Activities to provide accommodation and food services	27	4,00	93	13,00	120	17,00
J	Information and communication	17	2,00	28	4,00	45	6,00
K	Financial and insurance activities	78	11,00	11	1,00	89	12,00
L	Real estate	2	0,00	4	1,00	6	1,00
M	Professional, scientific and technical activities	16	2,00	67	9,00	83	11,00
N	Administrative and support services	6	1,00	25	4,00	31	5,00
O	Public administration and defense, compulsory social insurance	2	0,00	2	1,00	4	1,00
P	Education	0	0,00	1	0,00	1	0,00
Q	Human health and social care	1	0,00	5	1,00	6	1,00
R	Arts, entertainment and recreation	4	1,00	14	2,00	18	3,00
S	Other service activities	0	0,00	3	0,00	3	0,00
T	Activities of households	0	0,00	0	0,00	0	0,00
U	Activities of extraterritorial organizations and bodies	0	0,00	0	0,00	0	0,00
Ø	No information about the activities of the company	5	1,00	27	4,00	32	5,00
∑	TOTAL	512	72,00	1669	234,000	2181	306,00

Source: Prepared by the author based on data from empirical research.

Empirical research was realized in late 2010 and in 2011. In addition to preferred organizational culture, other scales of measurement were used in the extensive research. The rate of return of properly completed survey instruments amounted to 40.52 percent (124 of 306 firms). It can be concluded that the rate of return exceeded the planned threshold of 20 percent and that it is satisfactory.

2.2. Research results

Descriptive methods (mean, mode, median, etc.) and inferential statistics (multivariate exploratory techniques) using Excel and the Statistica 8 software package were used during the processing of data from the research The descriptive statistics is in Table 5. The preferred organizational culture scale has 15 items, so that a maximum possible score for a particular company is 75. All the investigated medium and large enterprises (124) make a total of 6793 points. The average number of points achieved for the Preferred organizational culture variable was 54.78 (6793/124) out of possible 75, while the average per parcel is 3.65 (on a scale 1-5). The achieved minimum score for the observed individual enterprises amounted to 29, and the maximum to 75 points, while the most frequent value was 59, and the median was 55.

Table 5 Elements of descriptive statistics for the Preferred organizational culture

Descriptive statistics /	Number of companies	Items of scale	Sum	Minimum/ maximum median/mode	The arithmetic mean	Standard deviation	Standard error	Average of items
Variable					_			
					(M= X)	(δ)		
1	2	3	4	5	6	7	8	9
Organizational culture				29/75				
(n=124)	124	15	6793	Med. 55/59	54,78	8,88	0,8	3,65

Source: Prepared by author based on data from the study.

Internal reliability and significance of individual particles measuring scale is in Table 6.

Table 6 Internal consistency and the importance of individual particles measuring scale of Preferred organizational culture (a sample of medium and large enterprises in Croatia)

Internal consistency of the scale (Cronbach's alpha / standardized alpha): 0.874 /0.873. (mean = 54.78; valid cases: 124, standard deviation = 8.88)					
Ordinal numbers of items	Items in the questionnaire research	Items of scales expressed as variables	Mean if item is deleted	Standard deviation after deletion of items	Cronbach's alpha if the item is deleted from the scale
1	2	3	4	5	6
1.	1.	Var1	50,99194	7,890885	0,851716
2.	2.	Var2	50,66129	8,223577	0,861689
3.	3.	Var3	51,20161	8,054232	0,854017
4.	4.	Var4	51,54839	8,058611	0,855065
5.	5.	Var5	51,14516	8,570104	0,879628
6.	6.	Var6	51,29032	8,084009	0,855496
7.	7.	Var7	51,32258	8,292582	0,863944
8.	8.	Var8	51,39516	8,324874	0,866924
9.	9.	Var9	51,73387	8,344506	0,871190
10.	10.	Var10	51,45161	8,115452	0,858059
11.	11.	Var11	50,97581	8,662548	0,888062

12.	12.	Var12	50,41935	8,369585	0,864854
13.	13.	Var13	50,68548	8,666181	0,877753
14.	14.	Var14	50,89516	8,391450	0,867900
15.	15.	Var15	51,23387	8,308671	0,863499

Source: Prepared by author based on data from the survey results and statistical analysis.

The measurement scale Preferred organizational culture demonstrated an acceptable internal reliability (it could be somewhat increased with further analysis and processing of the items 9 and 11), measured by the indicator Cronbach's alpha on the level of 0.874 (0.873 standardized), which is a significantly higher value than the generally accepted value of 0.7.

3. Discussion

By means of an empirical research based on the preferred model of organizational culture and a thereby designed measuring scale of preferred organizational culture, medium and large enterprises in the Republic of Croatia were examined, using a random sample method. The results show that the organizational culture in medium and large Croatian companies is on an average level of 73% if the maximum is marked as a result of 100% (average achieved score is 54.78 points out of a possible 75 points), which is equivalent to grade good and very good (on a scale of 1-5). There is sufficient space for changing the organizational culture of these medium and large enterprises in the direction of the preferred organizational culture, and it is a field/sphere/domain that is not utilized enough in managerial and institutional terms.

Achieved average individual results by items of the measurement scale ranged from the lowest 61% (tendency to action, experimentation, risk, tolerance of error) to the highest 87.2 percent (a responsible attitude towards the environment, which includes not only the legal but also the moral level). Data by items of measurement scales is presented in the Appendix. These results also represent the guidelines for possible improvements in the organizational culture of the companies.

Other studies of organizational culture in enterprises in Croatia resulted in similar outcomes, and that result is in the wider interval of acceptance of values. The results of the stage of development research of organizational culture in terms of the mean estimates of the organizational culture of Croatian companies (the maximum number of points or a maximum score = 100 percent) is at a level of 64.2% to 72.4 (Načinović, 2010, p. 30); in medium and large businesses, about 70 percent (Rudelj, 2011), the achieved result is 83.4% (2000) for the management organization (Brčić, 2002, p. 667), an average 72.8. (1994) for the bank (Žugaj, 2004, p. 233), or 69.4% (2003). for the incorporation "K" (Žugaj, 2004, p. 239).

Conclusion

Based on the research of various authors, it is possible to identify and propose certain desirable elements of organizational culture. The model that is focused on exploring such contemporary, good culture can be described as the preferred model of organizational culture. This confirmed the basic hypothesis of this study that it is possible to define a preferred model of organizational culture for companies. The measurement scale constructed on the basis of this model is used to study the achieved level of organizational culture that is most easily expressed as a percentage achieved compared to the maximum possible (this refers to the maximum number of points scored on the scale, which is expressed in percent). In this way the investigated medium and large enterprises in the Republic of Croatia, with the help of a random stratified representative sample (using an instrument of research with a measurement scale) shows the result at about 73 percent, and the result fits into a broader interval of acceptance in relation to other individual and group studies of organizational culture in the Republic of Croatia (from 64.2% to 83.4%). This data indicates that firms in the Republic of Croatia are still far from the best, the preferred organizational culture and that there is space for action in the direction of improving the organizational culture of these companies. Croatian managers must take this particularly into account.

Research shows that there are elements of the preferred organizational culture in medium and large enterprises in the Republic of Croatia that have outstanding value and those with below average in value (in relation to the average of 73% of one hundred percent possible).

I. The elements that have outstanding value:

a. Attitude toward the environment, which includes a moral rather than only legal obligation (87.2%);
b. Communications are free and intense and take place in a modern way (82.4%);
c. Facts (artifacts) speak in favour of the company having a modern appearance (82%);
d. Orientation on the goals, mission and business objectives are clear and well-known (77.8%);
e. Ethics is present with the desire to obtain profit even at the expense of others (76.2%);
f. People in organizations have a vital role and they are valued and respected (75.8%).

II. The elements that showed a below average value:

a. Innovation, error tolerance, risk appetite, experimentation, and action are very low (61%);
b. Flexibility and discretion are not expressed in the elements of culture (64.6%);
c. The working environment (organizational climate) has a below average score (68.8%);
d. The management (style, features) has a rating below the average (69.8%);
e. Common values and goals are not sufficiently expressed in the companies (71%);
f. Structures are somewhat adequate, but make the below average elements (72.8%).

According to the results of this study, generally speaking, the main problems of large and medium-sized enterprises in the Republic of Croatia are in the field of fundamental assumptions and common values, so it is difficult to expect a quantum leap in terms of improving the situation. However, managers can make a significant contribution to the process of approximation of organizational culture towards the preferred, especially in the field of labour-management atmosphere where the results can be seen relatively quickly.

Empirical research has shown that the preferred model of organizational culture and the corresponding measurement scale can be used to study the organizational culture of some businesses or those in the selected sample. The measurement scale of Preferred Organizational Culture has shown internal consistency measured by Cronbach's coefficient alpha at the level above 0.7 (most commonly accepted threshold value) and the data was at the level of 0.874, indicating the acceptability scale.

Difficulties in this study relate to the need for further validation of measurement scales and the use of specific research instruments to collect data from primary sources (companies), which is often associated with difficulties. Recommendations for further research are in the direction of bringing the preferred organizational culture and other variables and characteristics of the company (strategic management, enterprise performance, etc.) into connection. SM

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Appendix 1: The measuring scale *Preferred organizational culture*
((the particles and their average results achieved from a possible 100% indicated in parentheses)

A) This business company can be described as follows (claims 1-6):

1. People are capital and investing in lifelong education (expertise, skills, etc.) is not seen as a cost but as an investment in people, whose creative abilities are appreciated, acknowledged and respected. (75.8%)
2. Communications are free and networked (with mutual respect and intimacy), and are particularly intense via electronic means (phone, e-mail, intranet, web CMS, LAN, extranet, SMS / MMS, etc.). (82.4%)
3. Especially appreciated is knowledge, competence, excellence, diversity and the creation of the new (innovation), and the employees are loyal to the company and happy with bosses, the job and income. (71.6%)
4. It is a flexible organization based on values rather than rules (norms), in which employees have the freedom to decide on the basis of their knowledge and skills. (64,6%)
5. Orientation is on centralization, complex organizational structure and increased administration. (72.8%)
6. Employees are encouraged to be innovative and independent and there is a positive attitude to new ideas, and managers are competent and cooperative coordinators (coaches, friends, teams of consultants). (69.8%)

B) Characteristics of the enterprise (claims 7-13):

7. People identify with the company - rather than with a profession, department or another group, and our company is a set of successful individuals who make up a successful company. (69.2%)
8. Self-monitoring and self-discipline are considered the best ways to control the company. (67.8%)
9. We have a tendency to experiments, action, risk taking and tolerance of errors. (61%)
10. We are a big harmonious family that learns together and in which the there is a distinctive order that contributes to excellence. (66.6%)
11. To realize a large profit is welcome to our company – despite the fact that our partners will have losses and the company will have to let several longtime employees go. (76.2%)
12. We have a responsible attitude towards the environment, taking into account the moral and legal obligation concerning the minimum of environmental pollution and encroachment on natural resources. (87.2%)
13. The company has advanced technology and technique and has a well-kept facilities. (82%).

C) The goals and shared values (claims 14-15):

14. In this company, individuals and teams have clearly defined objectives relating to the business mission and goals of the company. (77.8%)
15. In this company everyone firmly believes in a set of common values for cooperation and achievement common goals. (71%)

The scale is a Likert-type. The ranges in scale from 1 to 5 represents a certain selection of subjects: 5 = completely true, 4 = mostly true, 3 = both true and false, 2 = mostly false, 1 = completely false.

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HRM Under Changes at Foreign Subsidiaries in Serbia in Line With a Central and Eastern European Survey

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Abstract
The majority of companies in the competitive sector in Central and Eastern European (CEE) economies have largely completed those major legal, strategic and structural modifications that followed privatization. With the intensification of competition, a continuous renewal is now being emphasized. In this situation, the role of human resources becomes particularly important. There is a lack in HRM (Human Resource Management) literature to identify new patterns of Multinational Company (hereafter MNC) involvement and its impact on HR/HRM activities of these firms. We have therefore begun a long-term CEEIRT research project investigating the transition of HR practices and roles in MNC subsidiaries in Central and Eastern European economies, including Serbia. We seek to understand how these practices and roles have developed in response to the sweeping economic changes within this region and report on the expectations of practitioners for the future.
This contribution has two goals. First, we outline our conceptual model with five major issues including eight HR items (critical HR issues, expatriates, localization, relationship between HQ and local HR, HR headcount, critical HR executives' competencies and use of external resources). Second, we will report the first preliminary results of our HR research, done at 20 major local subsidiaries of foreign MNCs in Serbia in 2010.

Keywords
Multinational companies, human resource management, local subsidiaries and Serbia.

Introduction

Ever since the importance of human resources was acknowledged in the Western world, more and more companies have been making considerable efforts to improve the effectiveness of human resource management. It is widely believed that the conventional sources of competitiveness (including protected markets, technology, access to financial resources, and economies of scale) are insufficient for maintaining a competitive advantage in modern-day competitive markets (Brewster, Maryhofer, & Morley, 2004; Ulrich, Allen, Brockbak, Younger, & Nyman, 2009). Many authors think that the human factor (knowledge, skills, and behaviour) is the key to sustaining long-term competitiveness (Sparrow, Hird, Hesketh, & Cooper, 2010). The careful, but not extravagant, management of our human resources must become increasingly important in the lives of both local and foreign organisations alike.

Many authors believe that multinationals generally operate their management functions (Szalavetz, 2010; Bekes, Helpern, & Muraközy 2011) including HRM (Hiltrop, 1991; Dowling, Festing, & Engle, 2008; Chikán & Czakó, 2009) at a higher level than do local companies, and they apply highly efficient

methods in the fields of performance management, communication, training of new entrants and career management, whilst local companies tend to focus on collective agreements and staffing issues related to strikes. The first reaction of market driven economies and multinational firms to the recent economic downturn was to immediately scale down the number of contracted workers (employee contracting). A quick cost savings campaign, the interjection of cash flow has been absolutely critical in these companies. In case of full-time workers – wherever possible – they took over assignments of the contracted workers (Charan, 2009).

The Central and Eastern European International Research Team (hereafter CEEIRT) – composed of researchers from different universities from Central and Eastern European (CEE) Region – has begun a long-term research project investigating the transition of HR practices and roles in Multinational Company (MNC) subsidiaries.

1. Foreign direct investments in Serbia

Since the onset of economic reforms in 2001, Serbia has grown into one of the premier investment locations in Central and Eastern Europe. By the end of 2009, the FDI inflow into the country exceeded €14 billion, while in the past four years alone, Serbia attracted nearly €11 billion of inward foreign direct investment.

According to PricewaterhouseCoopers, Serbia is the 3rd most attractive manufacturing and 7th most attractive services destination among emerging economies. Additionally, Ernst & Young recorded around 150 inward investment projects in Serbia in 2007, 2008, and 2009 –the 2nd best performance in the South East Europe region. Thanks to the good progress of privatization from 2000 on, Serbia has had a growth in FDI.

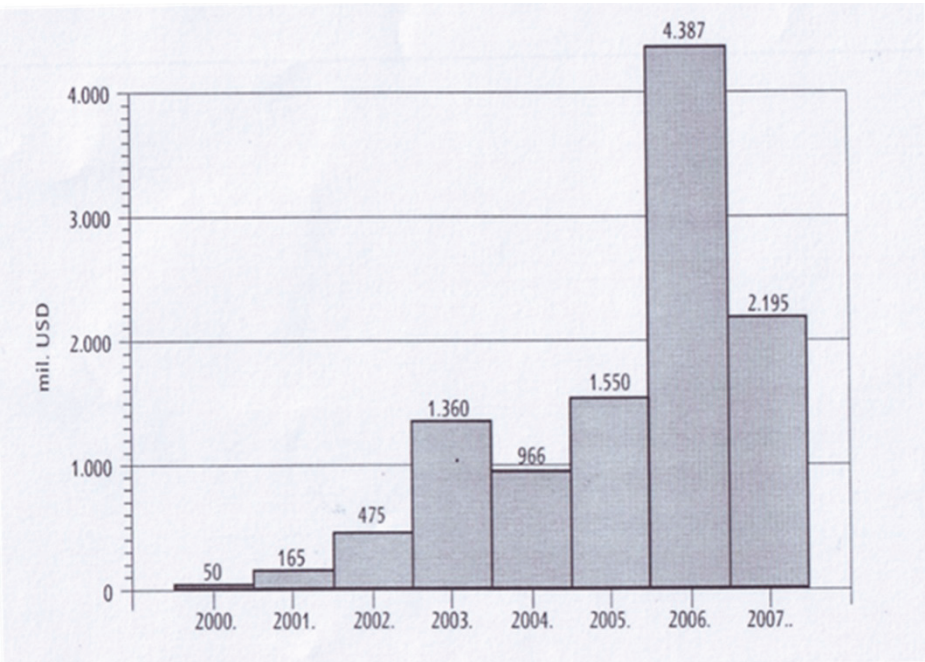


Figure 1 FDI in Serbia, 2000-2007 in mil USD
Source: Narodna banka Srbije, 2010.

According to Serbia Investment and Export Promotion Agency (SIEPA) in terms of the country structure, investors from the European Union top the list, accounting for about 70% of the total FDI influx. The leading spot on the country list is held by Austria, followed by Greece, Norway, Germany, the Netherlands, while major investor countries also include Slovenia, France, Hungary and Luxembourg. The actual amount of U.S. investment is significantly higher than the official figure due to their companies investing primarily through European affiliates. This also holds for Belgium, Denmark, Israel, and a number of other countries.

Table 1 Inward FDI to Serbia by industries (2005-2009)

Inward FDI by Industries (2005-2009)	
Industry	**Investment Value (USD million)**
Financial Intermediation	5,294.4
Manufacturing	3,161.3
Transport and Telecommunications	2,681.6
Real Estate, Renting	2,060.9
Wholesale, Retail, Repairs	1,829.2
Mining and Quarrying	578.6
Construction	351.8
Hotels and Restaurants	178.8
Other Utility, Social and Personal Services	166.0
Agriculture	131.2
Public Administration and Social Insurance	95.9
Electricity, Gas and Water	13.0

Source: Narodna banka Srbije, 2010.

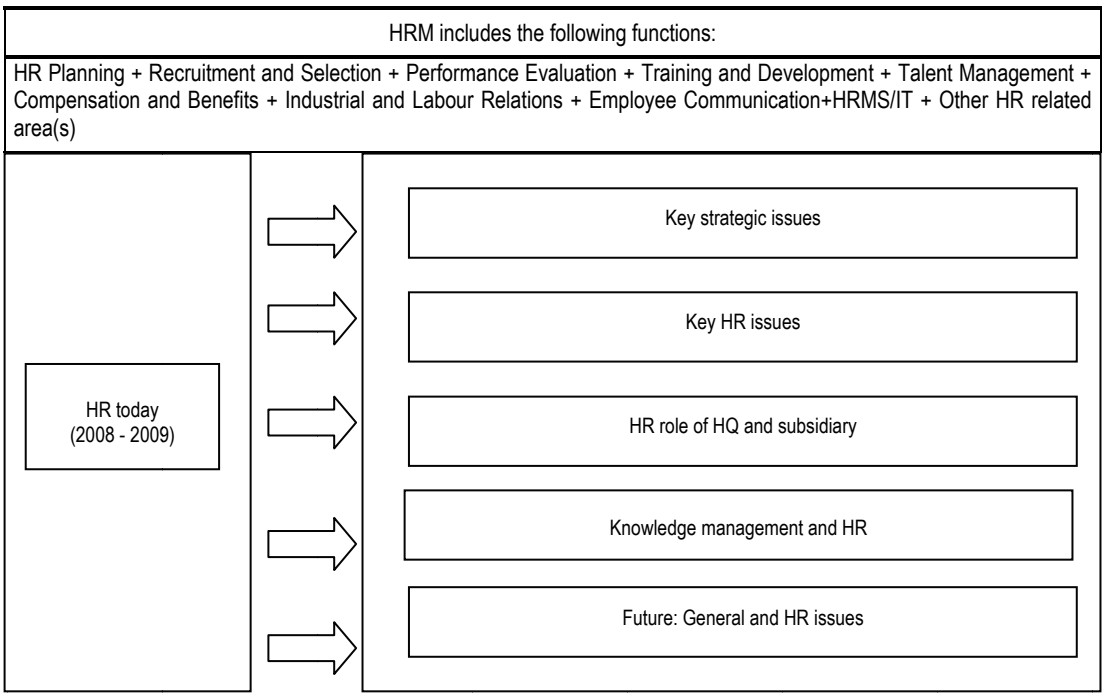
Over the past five years, service sectors have proven to be the most attractive to international investors. Banking and Insurance recorded the largest FDI inflow of $5.3 billion. Manufacturing industries held the 2nd place with $3.2 billion, followed by Transport and Telecommunications, Real Estate and Renting, and Trade.

2. Research approach

Model and variables

Undertaking a study of HR practices in the subsidiaries of MNC in CEE region, and specifically in Serbia, we begin our examination with the model shown in Table 2.

Table 2 Research model



Source: Authors

Developing the research model shown in the table above, we implemented international results and several of our own previous surveys. During the analysis we collated the observed picture with the findings of other research projects conducted in Central and Eastern European region, including Serbia; thus, inter alia, we built on:

- Models developed in the field of human resource management (Brewster et al, 2004) and international management (Hill, 2002). Our own analyses carried out in 2004 involving 42 foreign owned Hungarian subsidiaries based on the integration of these models (Poór, Engle, & Gross, 2010).
- Our domestic and international experience gained during Cranet HR research being carried out in Hungary and Serbia by our departments (Karoliny, Farkas, & Poór, 2009; Karoliny & Poór, 2010, Leković & Šušnjar Štangl, 2010a, Leković & Šušnjar Štangl, 2009).
- Results of our collected and published recent theoretical and empirical examinations in the field of knowledge management, see Boyacigler & Adler, 1991; Kamoche, 1997, Dobrai & Farkas 2007; Dobrai & Farkas, 2009; Dobrai, 2008; Leković & Šušnjar, 2010b).
- Research experience we gained over recent years during our analyses in the field of organizational and national culture (Hofstede, 1980; Jarjabka, 2009).
- In addition, we drew upon the most recent HR research projects we conducted in relation to the global economic crisis in 2008 (Fodor, Kiss, & Poór, 2010; Courtney, 2008; Balázs & Veress, 2009).

In the research we covered the following areas:

- Characteristics of surveyed subsidiaries: the most important organizational and economic characteristics, namely origin of parent company, year of establishment of subsidiary, main area of operation of the company – sector –, size of organization (based on revenue and number of employees) and evolution of its productivity index, its mandate in value chain and main steps, directions of its development.
- Key indicators of HR function: number and workload of staff employed in HR departments, main indicators representing importance, results, and efficiency characteristics of HR activity (labour cost – total cost ratio, age distribution of employees, relative weight of training budget, level and rate of fluctuation and absenteeism.)
- Most important HR characteristics of the period examined: importance of HR function, use of foreign and Serbian expats, distribution of roles between central and local HR, role of local HR in developing and operating different HRM subsystems, most important key competencies and fundamental sources of professional development of the person interviewed.
- Knowledge management of HR: main directions, methods and characteristics of knowledge flows.
- The future of HR: most significant changes from an HR point of view occurring in the next 12-24 months.
- Data of respondents: data on current HR department and its employees.

In this summary, we give an overview of the most significant experience gained in the 20 MNC subsidiaries in Serbia in the survey through 15 December 2010 when the survey was closed down. Most of our questions were related to the characteristics of participating subsidiaries observed in 2009. In some cases (number of staff, revenue and HR efficiency indicators) we collected data from both in 2008 and 2009.

Although the analysis was descriptive, it revealed objective data in all cases. The appropriate sample size for a population-based survey is determined largely by three factors: (1) confidence level, (2) size of population and (3) confidence interval. Concerning this survey, with 20 participating MNC subsidiaries, it is not representative for Serbia, but it shows the HR practise of the most important MNCs in this country.

Hypotheses

We will now select elements of the model and present a series of more concrete hypotheses for analysis. Given the wide scope of conceptual framework we chose to select elements across the model for investigation. Our hypotheses were as follows:

H#1: Due to the global economic crisis, local subsidiaries of international companies are much less likely to downsize their full-time staff than contracted employees.

H#2: Effectiveness of HR department at foreign-owned firms is expected to be much above the work efficiency of local companies. Our claims will be interpreted by the following indicators: number of HR staff, labour cost – operating cost ratio, relative weight of training budget.

H#3: Having finished initial phases of development (merging and acquisition or firm establishment, reconstruction), training and development activities will decrease, and number of Serbian inpatriates will increase.

H#4: HR departments of local subsidiaries manage their relationships with the HR units at HQ in a variety of different ways. A high level of centralization of HR activities, controlled by HQ, is not expected for the surveyed firms.

H#5: With growing people management awareness amongst line management, HR will lose its primary role and authority will be shared by HR and line management.

H#6: Training and development activities will be more likely than other areas of HR to be outsourced to external providers.

3. Methodology

The sample

General characteristics of participating companies:

- 20 local subsidiaries of different foreign owned companies registered in Serbia participated in the survey.
- The majority of participating companies are small or medium-sized enterprises according to the new EU classification based on the number of their employees (less than 250 employees) or on their revenue (less than 40 million Euros).
- 50% of the surveyed companies are engaged in the production sector and 45% provide tangible and intangible services.
- 70% of the surveyed companies came from the following four countries: Austria (25%), Germany (20%), Hungary (15%) and Italy (10%). The remaining 30% represent another six countries.
- Only the 15% of the companies analyzed acquired majority control or carried out greenfield investments before 2000. About one third of foreign owners (35%) settled in Serbia between 2001 and 2005, while the majority arrived after 2005.
- About 30% of the companies participating in the survey operate in Serbia with a mandate to carry out development to the whole global market. (Comments: we classified the participants into five groups based on how much of the value chain is covered by the range of activities that are the responsibility of the local subsidiary.)
- Production technology was chosen most frequently (50%) by the respondents from the most important competitive factors of companies (more than one answer could be marked in this question). A large number (45%) of the respondents emphasized having ample financial resources and workforce (45%). Respondents also deemed optimal plant/organization size (40%) and management (35%) to be very important competitive factors.

Responding individuals

General characteristics of responding individuals:

- 55% of interviewees were top managers or top HR managers with the majority (65%) of them having spent at least 3 years in their current positions.
- The majority of respondents were men (60%), while all the interviewees had third level degrees.

4. Results

Characteristics of the key indicators of HR function

The number of staff employed at the examined companies in 2008 was 20,203, while in 2009 it increased to 23,389 employees. This fact, unexpected reaction to the crisis may be explained with the following:

- Some companies participating in the survey had already significantly rationalized their labour force before the crisis.
- Those subsidiaries that employed a significant number of people with fixed-term contracts or leased labour force dismissed these employees as a first measure of response.
- Some over-diversified companies sold or outsourced their non-core businesses.
- A number of firms defined as processing and developer companies actually increased their number of employees during the crisis.

The second important indicator, the number of staff served by HR staff declined during the examined two years. In 2008 respondent firms had HR staff that served just over 70 employees. In 2009 this indicator dropped below 88 employees, because the total number of employees increased by about 16% while staff in HR decreased by about 10%. In 2009 nearly 52% of the total number of HR staff was professional and 48 % belonged to the administrative categories.

HR departments of the examined companies are relatively small, the number of HR staff was below than 5 persons in the case of half of the respondents. About 20% of them employ 5-10 HR people, while only 20% of the examined companies have more than 20 HR staff. As the majority of analyzed companies are small or medium-sized it is reasonable not to have large small HR departments. The Cranet survey made in 2008 in 50 companies in Serbia resulted in 3,37 employees in HR departments in average. (Leković & Šušnjar Štangl, 2010a)

The labour cost – operating cost ratio is one of the frequently analyzed indicators of the importance of the HR function in a company. According to assumptions, contributory effects of HRM practices have a stronger and more direct influence on company performance if this ratio is higher. About one quarter of subsidiaries participating in the survey fell into this category (where labour cost ratio is higher than 40%). But the vast majority (65%) of the companies operated with a relatively low (under 30%) labour cost ratio. The Serbian Cranet data are very similar, as in 2008 this indicator was about 33%.

Literature considers the relative weight of training budget (compared to the entire annual labour cost) as an important indicator of modern and effective HR activity. In more than 60% of the examined companies, the relative weight of training budget was under 3% and only about one third of the examined companies spent more than 7% of annual labour budget on training employees. The global average of this indicator calculated using the formerly mentioned Cranet (2006) international comparative HR database was 3.36%, Eastern European index was 3.15% and the Serbian 2,64%.

Expats and their roles

The belief that management practices are universal has spread widely along with globalisation. The assumption is if you have succeeded in one culture, you are likely to be successful in another. Hofstede (1980) argues that, although management practices may be universal, they have to be adapted to local cultures.

After Perlmutter (1969), multinational companies following four personnel strategies have different priorities in their selection and recruitment policies. The company can follow an ethnocentric, polycentric, regiocentric or geocentric selection mechanism. In ethnocentric orientation, key positions of local company are held by professionals from parent company. In polycentric companies, local key positions

are held by locals but their promotion to higher positions is very limited. In companies following regiocentric selection mechanism, locals can hold key positions not only in subsidiary but also in centres and in work roles coordinating the management of the region. In companies following geocentric selection mechanism, locals can obtain position even in top management of the company.

Usually two types of long-term expatriate assignments are distinguished. The ones arriving from abroad (from parent company of a third country) who are also called expatriates and the ones from Serbian subsidiary appointed for a long-term deputation away from Serbia (at parent company or subsidiaries operating in other countries.

Number of foreign expatriates decreases according to level of maturity of subsidiaries (Shenkar & Nyaw, 1995; Simai & Gál, 2000; Peterson, 2003). Expatriate managers are most frequently seen during an acquisition or major realignments of a subsidiary's activities. During global crisis there are thought to be fewer expatriates as they are an expensive form of human resource.

- 65% of subsidiaries participating in the survey didn't employ foreign expats in non-managerial positions. In those few companies that employed foreign expats in non-managerial positions permanently, the number of these expats was less than 10 positions.
- The presence of expats employed in managerial positions is typical in 60% of companies where they were present, their number was typically between 1-3 positions, but a few respondents employed 6-10 and one even more than 20 of them.

Impatriation "involves the transfer of subsidiary managers to headquarters for a specific period of time" (Harzing & Ruysseveldt, 2004, p. 266). Below we outline how often and to what positions Serbian expats were sent to foreign (non-Serbian) units of MNCs:

- The majority (80%) of respondents did not send employees abroad. Companies that sent employees abroad, sent usually 2-3 employees to managerial and non-managerial positions, too.

The operation of the HR department

Taylor, Beechler, & Napier (1996) describe the relationship between subsidiaries and parent company with the following three basic systems of relations:

- In exportive system of relations; HR systems developed in parent company are adopted without changes.
- In adaptive system of relations; local subsidiaries adapt HR systems adopted from parent company according to their local needs.
- In integrative system of relations; all good and applicable solutions are attempted to be spread and implemented in all units of the company regardless of their HR system of origin.

Lawler (2006) concluded from his research conducted among American subsidiaries operating in Asia and Europe, that the most dominant deciding factor in adoption and adaptation of HR systems is the size of local companies. The question is reasonable: which solution should be applied in a certain case? The above mentioned authors say that the system to be implemented depends on the sum of the impacts of internal and external factors that form and influence the organization. In certain cases national culture of host country and legal, regulatory environment are considered influencing factors.

We found several approaches among the companies examined as follows:

- The most typical solution (implemented by almost 74% of respondents) was that the HR department of the company's headquarters, besides carrying out auditing function, lays down general guidelines and provides a standard framework for the work of HR departments of the subsidiaries and requires information and reporting from them.
- In addition, in the case of almost two third (64%) of the companies, the headquarters provided resources and advise when requested.
- In less than half (42%) of examined companies the headquarters requires information from local HR departments.
- In more than one quarter (26%) of respondents the headquarter was also responsible for developing detailed HR model. Not only personnel policies but also rules and procedures were developed centrally. Operations of these global HR systems were usually supported by modern IT solutions.

- Almost 32% of respondents responded describing an absolute centralization of HR practices.
- On the other hand, more than one third (37%) of HR departments of responding subsidiaries reported getting hands-off, almost complete freedom from headquarters and decentralized HR activity.

Changes in importance of HR functions

Among the basic HR activities employee communication, industrial and labour relations and talent management was considered the most critical areas in the period examined, being a little ahead of the evergreen problem areas, like performance management, training and development and the issue of compensation and benefits. See table below.

Table 3 Critical areas of HR (on a 1⇒5 scale, on average)
(Explanation: 1= critical ⇒ 5 = not at all critical)

Ranking of HRM areas critical in 2009	Average of answers
1. Employee communication	3,2
2. Industrial-labour relations	3,2
3. Talent management	3,2
4. Performance evaluation	3,1
5. Compensation and benefits	3,0
6. Training and development	3,0
7. Recruitment and selection	2,8
8. Human resource planning	1,9

Source: Authors

Respondents regarded human resource planning and staffing (recruitment-selection) as the least critical area of their work, despite the fact that many of them operated with considerably high fluctuation rates. However, this opinion is hardly surprising, considering high unemployment rate during the crisis.

Typical HR competencies for success

From the somewhat completed list of HRM competency areas identified by one of the most knows HR gurus, Dave Ulrich et al. (2009), respondents considered the following three to be the most important:

- personal credibility (effectiveness, efficient connections, communication skills) (70%),
- change management (60%),
- quick decision-making (55%) and teamwork (55%).

The "knowledge sharing" was followed, in respect of importance, by "the use of HR information systems". In the opinion of the respondents, strategic contribution was ranked last among very important HR competencies in their companies in the period examined.

Primary responsibility of decision making in main functions of HR

Ulrich et al. (2009, p. 126) assume that a successful process of HR transformation "depends on the quality of HR professionals and their relationships with line managers". Our current survey confirms the finding also established in other studies (Cranet, 2006) that line management has larger responsibility or control in some HR decisions, while local employees of the HR department have in others-an arrangement of complementary responsibilities.

As data of our survey show, a majority of respondents regard most of interventions in key functions of HR as result of a joint decision made by local HR department in consultation with local line mangers. It is characteristic for decisions concerning recruitment (50%), selection (45%) and training and development (40%). But the majority (45%) of decisions about HR planning are made by local managers in consultation with HR department.

The role of external HR service providers

Nowadays human resources are managed in many organizations with involvement of external service providers. Besides traditional HR consultants, an increasing number of service providers appear who enter the market offering new services (e.g. labour leasing, outsourcing, interim managers, etc.).

In Serbia, external service providers were most often used in training and development activities (70%), as reported by respondents. They were also often involved in recruitment (50%) and selection (55%), performance evaluation (50%) and area of compensation and benefits (45%). Only 10% of the companies used external service providers in human resource planning. The practice of companies in this respect either didn't change or where it did, companies reported a decrease in use of these external partners.

5. Conclusions

This explanatory survey supports the contention that small and medium sized foreign owned Serbian subsidiaries are in process of implementing a higher level of HR practice. In this section of the paper we present preliminary results for six hypotheses:

Hypothesis #1 was verified by this descriptive research. In the case of the majority of 20 investigated small and medium-sized subsidiaries of MNCs, the number of full-time employees has increased.

Hypothesis #2 was partly verified by this descriptive analysis. Regarding the number of employees working in the field of HR, the situation has altered. Cranet survey showed similar number of HR staff. The majority of the examined firms operate with a highly effective and relatively low labour ratio. In most cases training budget is similar to the global average of Cranet (2006) survey which was used for comparison. But as one third of the examined companies spent more than 7% of annual labour budget on training employees it verifies the higher effectiveness of HR departments in multinational companies in Serbia.

H#3: This examination has supported our assertion that at multinational subsidiaries in Serbia, the number of foreign expatriates has been continuously decreasing and the majority of companies do not employ foreign expats nor send Serbian expats abroad.

H#4: Our investigation has supported the contention that local subsidiaries are managed in a wide variety of ways. High degrees of centralization coming from the global HQ could be observed in only a few organizations.

H#5: Across a wide range of personnel decisions, the majority of HR departments cooperate with line management.

H#6: As an effect of the crisis, local subsidiaries of multinational companies used the services of external consultants less than before. Examined companies used external service providers mainly in the field of training and development.

6. Limitations and directions for future research

This study is an intermediate milepost of ongoing research, which was initiated in 2004-2005 with similar methodology in Central and Eastern Europe and restarted at the end of 2009. Serbia was taking part in it for the first time in 2010. As we have indicated earlier, the number of samples is relatively small (n=20), however, it can fairly well represent the practice of small and medium-sized multinational subsidiaries in Serbia. In case of large multinational subsidiaries our results can be viewed as fewer representatives.

We intend to develop our research in three different directions:

- These recent descriptive statistics will be coded and evaluated with correlation and regression analyses.
- In the meantime, our research concerning several CEE countries (Estonia, Croatia, Poland, Romania and Slovakia) has been conducted. Connected to it, Serbian data will be compared with these regional data on the basis of both descriptive and correlation and regression analyses.
- We intend to examine cultural similarities and differences in HR practice at organizations with different cultural backgrounds (American, German, Latin, etc.)

- In the following stage of our research, we shall try to indentify any patterns in type of industry, size of firm or national origin of firm here. SM

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Risk Modeling in the Insurance Industry

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Abstract
The ability to respond swiftly and effectively to a major incident caused by realisation of risks which can be influenced by factors that might come from almost all fields of insurance and reinsurance business, presents condicio sine qua non of insurance and reinsurance companies' survival and profitable continuity of business. Having that in mind and within the context of capital adequacy and imposed constraints of risk interconnectedness, the aim of our research has been to identify potential benefits and weaknesses of risk modeling. We conclude that overreliance on risk modeling is not desirable, due to particular limitations of models. They can be powerful risk management tool only if their results are combined with expert estimates.

Keywords
Insurance, model, natural disaster, reinsurance, risk.

Introduction

Ever since their establishment, managing insurance companies has implied risk management, based on the application of mathematics and statistics, particularly the law of large numbers, in order to determine amounts of premiums based on their quantified risks and estimated costs of insurance. From the 1980s, some insurance companies introduced the first models of the assessment of catastrophic risks, which have little probability of emerging, but highly adverse consequences. They have provoked the most attention of insurers, given their extensive impact on the reduction of available capital. However, more rapid development and application of models began after Hurricane Andrew in 1992, the most catastrophic event in the previous history of the insurance sector, which cost the sector $ 17 billion and caused the bankruptcy of 11 insurance companies (Njegomir, 2009).

Until twenty years ago, risk assessments were based on the instinct and logic of actuaries, leading to variability in assessing the probability of occurrence and intensity of the possible consequences of adverse events and thus the variability in determining insurance premiums. Models are completely changed the way the insurance industry deals with a number of risks, thanks to their ability to quantify the risk of natural disasters and to express the aggregate level of risk that insurance company is exposed to. Risk modeling, especially for risks with catastrophic consequences, supported by the application of modern information technology is rapidly evolved in the last decade, due to the need to estimate and accept the risks in the insurance coverage based on scientifically methods. Although initially implemented models are not applied only within the insurance industry, but also by state governments and large companies that seek to optimize the relationship between risk transfer and retention, providing a larger discount in insurance premiums for risks that can be adequately covered within own retention. After a disastrous hurricane season of 2005 in the USA, models and their results are beginning to be used by the rating agencies in determining the credit rating of insurance companies. It implicitly suggests that investors who focus on credit rating in order to provide the maximum return on the capital invested in the insurance sector, also use the results of risk modeling. Today models are an irreplaceable tool primarily used by the insurers and reinsurers for risk assessment, determination the price of risk,

risk transfers, portfolio strategies. Further in the paper are explained the bases of models and different types of models available to insurance companies, as well as the way of their use, their advantages and limitations. We have also given an overview of how to combine different models and sources of information in order to achieve desirable results.

1. Capital adequacy for risk coverage and risk management models

Insurance provides a mechanism of risk dispersion through their grouping, which enables individuals and companies to accept the risk that would be unacceptable without the insurance (Rejda, 2005). Based on actuarial data and analysis, insurers tend to quantify risks adequately and determine insurance premiums, as the individual contributions to risk coverage.

Adequate risk management in insurance companies has become a means of improving shareholder value, as well as means of demonstration of top the management's commitment to this issue. Appropriate capital management in insurance companies is a necessary precondition of ensuring their solvency (Njegomir, 2006a). Namely, proper risk assessment is necessary to determine the amount of capital required to support the overall risks faced by the insurance companyand to distribute total capacity for taking risks into the certain groups of insurance. It is the way to optimize business performance and maximize the return on capital within the acceptable level of risk. Applying a holistic process of risk management in all areas of business can provide the basis for accurate, timely and complete information for management in the process of business decisions making, in order to optimize the business. Optimization in this sense means striving to minimize the cost of capital and total risk with a given amount of capital, and run profitable business (Njegomir, 2007).

Without adequate risk assessment and analysis, insurance company can adopt a strategy that will discredit capital over time and result in inefficient use of available resources, which could endanger not only profitability but also the existence of the insurance company (Seog, 2006). Thus, computer supported risk modeling of catastrophic events features significant aid in improving the accuracy of forecasting of emerging and potential adverse impact of catastrophic events in the individual insurance companies and the entire insurance industry. Risk modeling contributes to creating a fairer pricing of insurance premiums. Amounts of premiums determined on the basis of the model results are more related to risk, on which they are charged. Based on model results, insurance companies are in a position to better analyze and estimate the total amount of capital needed to support the portfolio risk and to allocate available capital to individual risks within the portfolio (Njegomir, 2006b). For example, one of the key measures that appear as output of the model is an indicator of the maximum possible damage. This indicator compares the total amount of charged premium to the potential maximum damage that total risk portfolio can produce. All this contributes to insurers' and reinsurers' ability to effectively manage the available capital, as the KPMG study suggested the priority reason for using the model (Study into the methodologies for prudential supervision of reinsurance with a view to the possible establishment of an EU framework European Commission, 2002).

Although the above had existed earlier, modeling catastrophic events began to develop and attract the attention of insurance and reinsurance companies especially after Hurricane Andrew, when insurance companies become aware of their increased exposure to potential effects of catastrophic events. Hurricane Andrew, which struck Florida in 1992, was the most catastrophic event for the insurance industry by then. It cost the insurance sector $ 17 billion and caused bankruptcy of 11 insurers and insurance premiums increase by 300%. One of the reason of the negative consequences of Hurricane Andrew for the insurance companies was that they were not prepared for an adverse event of such scale. The subsequent milestones in the development of the model were the Northridge earthquake in 1994, winter storm Lothar in 1999, which, unlike other big catastrophic events, occurred in Europe, not in the USA. After terrorist attacks on the World Trade Center, relevant stakeholders started developing models for risks that are not caused by nature. Hurricane Ivan in 2004 demonstrated for the first time that beside the main, there can also be possible additional adverse events in a very short time. Hurricane Katrina in 2005 completely changed the way of treating risk assessment models in insurance industry.

Insurance companies can develop risk modeling models or software in-house, as usually, or purchase outsourcing models. Small and medium-sized companies, without enough financial resoruces, capabilities and experience in software developing and maintaining, usually outsource models. Based on

the needs of the insurance industry for more scientific and technical approach in accepting risk in insurance and reinsurance coverage, the need for reliable and accurate information about risk, resulting companies are starting to deal with professional insurance risk modeling (Njegomir & Ćirić, 2011). AIR Worldwide Corporation is the first of three leading companies in risk modeling for the insurance industry, established in 1987. Risk Management Solutions was founded A year later, and Eqecat in 1994. The Federal Emergency Management Agency FEMA (2011), with their Hazus software solution for floods, earthquakes and hurricanes, also has important role in risk modeling. Leading brokers of insurance and reinsurance companies such as Aon, Benfield, Guy Carpenter and Willis, license the models of mentioned companies, also develop their own risk models to support their clients - the insureds and insurance companies.

2. Risk modeling of natural disaster and risk interdependence

Modeling is the process of creating a statistical model of future behavior, ie. prediction of probability, trends and correlations. It is a process of using computer supported calculations in insurance in order to assess damage that may occur within the risk portfolio of an insurance company by catastrophic events such as hurricane or earthquake. The process of developing sophisticated models of catastrophic risks is complex and based on the expertise of many disciplines, technical as well as financial. Models are results of combining actuarial science, engineering, statistics, meteorology and seismology. Modeling as a means of risk management is most advanced in the field of natural disasters. Nowadays there are models for almost all catastrophic risks that arise due to the destructive effects of natural forces such as hurricanes, earthquakes, floods or winter storms, but there are also more and more models for catastrophic events caused by human factors such as the risk of terrorism. Risk assessment models are based on variables that are likely to influence future behavior or results, and combine historical data on the realisation of catastrophic events with current demographic data, data on building characteristics (age, type and purpose), and scientific and financial data in order to determine the potential costs of catastrophic risk for a particular geographical area. Models use different databases for simulation of different physical characteristics of thousands of potential catastrophic events and predict their outcomes.

Modeling of risk to the insurance company is accomplished in four steps: the different risk factors to which the insurance company is exposed are identified first; the second step is the selection of stochastic models for selected risk factors, followed by determination of different growth factors interdependences, and the final step determining how realisation of these risk factors can affect the success of the insurance company. Models incorporate the financial data of insurers and reinsurers, such as the value of insured property, franchise deductible and limits of the insurance policies, in order to create probability of adverse events emerging, resulting from the different scenarios that exceed a limited dollar amount. Insurance companies can estimate the correlation of expected damage from a catastrophic event or combination of events that could endanger more than one geographical area. In this way, risk assessment models of catastrophic events help insurance companies in the management of aggregate exposure to catastrophic events.

The events of September 11 and Hurricane Katrina in 2005 are typical examples of catastrophic events, characterized by the existence of unusual correlation of risks that were not previously included in modeling. These events caused great losses in different branches of insurance at the same time, which was a complete novelty because of simultaneous realisation of risks that were previously thought to be independent from each other. The attack on the World Trade Center has led to the simultaneous loss in the field of aviation insurance, marine insurance, accident insurance and residential and commercial real estate insurance. In the normal circumstances, these branches of insurance have no common cause of risks realisation, thus they are not integrally included in the models. This means that risk such as fire after an earthquake was included only as an extra risk, integrated in the methodology of risk assessment after these catastrophic events.

Clear determination of individual risk impact to assets and obligations, by using the model, allows insurance companies to model the interdependence between risk factors, taking into account the fact that one factor of risk affecting simultaneously several branches of insurance can have a multiple impact on the insurance company. It is necessary to separate the effects of individual risks in order to identify interdependencies and avoid accumulation effect (which occurs when there is a positive correlation

between risks) through the adequate diversification. After determining risk factors and their interdependences, the next step is calculating the probability distribution of different business results of the insurance company, by specifying probability that the profit or loss will be within a certain range. The total probability distribution can be summed up in one measure of risk that can be converted into the amount of required capital. Various statistical measures can be used to summarize and display the probability distribution so as to define basic capital requirements, but most commonly used measures are VaR (value at risk) and expected shortfall.

3. Examples of risk modeling

It was pointed out that after Hurricane Andrew a large number of models were developed and today there are models for almost all types of risk. Bearing in mind that it would be almost impossible to show and explain all the models available in the insurance industry, we shall only present examples of several models in order to clarify their way of functioning.

Interest in a possible influenza pandemic is particularly increased due to the expansion and mortality of avian influenza virus H5N1. There is a risk of avian influenza, due to easy transmission from human to human, resulting in a global pandemic. Similar pandemics have been recorded throughout history, and one of the most famous is the Spanish flu of 1918 that spread to almost all countries and resulted in mortality of 50 million people worldwide. To help insurers and reinsurers to prepare better, in terms of adequate risk assessment of the global pandemic of avian flu, Risk Management Solutions Inc. from Newark, Calif., has created a model to be launched as the RMS Infectious Disease Model. By using about 2000 different scenarios and covering 31 countries (Australia, Austria, Belgium, Brasil, Canada, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italia, Japan, Malesia, Netherland, Filipini, Poland, Russia, Singapore, South African Republic, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, Great Britan, USA and Vietnam), this model shows that pandemics of low and medium intensity occur every 25 to 33 years, and strong pandemic occur with probability 1 in 250 years. The model can be used by risk managers and insurance companies in order to quantify potential victims, mortality, number of days of job absence, number of days needed for care and other economic indicators. The model is therefore suitable for insurance companies engaged in life insurance, health insurance, sick pay, as well as business interruption insurance.

Although long known, the risk of earthquakes is still occupying the attention of the insurance industry and risk modeling companies. The importance of this risk is accented by new findings obtained through modeling the risk of earthquakes, according to which, for example, repeating the 1906 earthquake in San Francisco could produce a negative economic consequences of around 260 billion dollars, and the estimated damage for the insurance industry ranging from 50 to 80 billion dollars. In the context of modeling, it is interesting to give an example of a model for this risk in Switzerland. Although there is a moderate danger of seismic risk, combined with relatively low probability of earthquake, because of high population density and large value of property assets in this developed country, the risk of earthquakes is a significant risk as evidenced by historical experience. For example, the repeating of the Basel earthquake (1356) could produce a total property loss in the amount of 15.5 billion dollars. AIR Worldwide Corporation, a company member of the Insurance Services Office (ISO) group based in Jersey City, New Jersey, has developed a model for earthquake risk in Switzerland using the earthquake catalog dating back 240 years and including information on more than 4000 earthquakes with magnitude 3 or greater. By using the latest findings in seismology, the model is a powerful tool for quantifing the potential damage to the level of detail, estimating the probability of occurrence, intensity of negative consequences, and other characteristics of potential future earthquakes.

The risk of floods also features as one of the well-known risks in the insurance industry. However, a number of achievements in flood risk in Europe in the last few years highlights the need to improve managing these risks in the insurance industry. For example, floods around the river Elbe in 2002 caused damage amounting to some $ 20 billion, while in the insurance industry, total losses amounted to 2.15. billion dollars. In the UK, total estimated cost for the insurance industry, according to estimates by the Association of British Insurers approached a figure of 3 billion pounds with a total of about 60,000 filed compensation claims. By identifying the need for modeling this risk, the company Eqecat from Oakland (California) has teamed up with brokerage firm Guy Carpenter in the reinsurance operations, and has developed a model called EuroFlood. This model currently covers Germany and Austria, with a

planned expansion to other countries in the future. Insurers and reinsurers can use the model as support for internal risk management related to flood risk (control of risk accumulation, the adequacy of determining the premium for this risk, portfolio optimization, allocation of available capacity), the pricing of reinsurance coverage and compliance with regulatory requirements.

4. Limitations in model application

Among all the developed models for risk assessment in the insurance industry, most public attention after the hurricane seasons of 2004 and 2005 in the United States, was attracted by hurricane prediction risk models. This attention is a result of the inability of models to predict the precisely the potential damage. Namely, the three leading modeling companies gave different estimates of potential harmful effects, especially for Hurricane Katrina, which resulted in a high level of model uncertainty, although the main reason of models and modeling is to reduce the uncertainty as much as possible. Meteorologists can give a completely accurate assessment of the risks associated with climate impact in this case the activity of hurricane season, but predicting the exact probability of occurrence and intensity of the possible consequences of the hurricane still remains in the field of speculations. The main reason why the assessment of different models varied considerably (estimates have varied in the range of 25 to 60 billion dollars) is because the different models are based on different assumptions, data and computer algorithms and due to fact that not one model predicted damages from flooding that occurred after Hurricane Katrina. Flood defense system deteriorated, which led to total flooding of New Orleans. In addition, the models for estimating probabilities of hurricanes are based on historical data of hurricane activity in the last 100 years, but the recent events of hurricane season in the U.S. showed a higher probability of occurrence of hurricanes, with more harmful consequences than is recorded and thus limited the credibility of model results.

Models for predicting the effects of catastrophic events on the insurance and reinsurance companies quantify damages for the entire risk portfolio based on the set of reconstructed and simulated historical events and transform the parameters of physical damage caused by these events in the financial amount of the expected damage for the total portfolio risk. The whole modeling process is inextricably linked to the significant uncertainty in all steps of the evaluation process. First, it is high probability that the risk of a catastrophic event is not sufficiently clarified yet and that the expert opinions on the issue vary widely. Although there is a large volume of scientific data regarding the catastrophic events, these rare events still remain insufficiently clarified. In addition to different views of how these phenomena should be modeled, the limiting factor is the lack of available historical data, which therefore may not be representative for any current or future behavior of a risk. The limiting factor in this context is the complex nature of catastrophic risks and physical models used to describe risks and this complexity can lead to great sensitivity of model results to data that are used as inputs. Second, the damages resulted from realisations of catastrophic risk are subject to inherent randomness, which can only be reduced by analyzing a large number of risks, by which should have in mind that the models represent a simplification of reality. Finally, the financial amount of damage can vary considerably between individual portfolios or events due to economic factors such as inflation, the practice of liquidating compensation claims or changes in insurance coverage.

The results of the individual models may depend on:

- the level of assumed certainty taken in the calculation of required capital - for example 99% VaR or 95% VaR,
- the time horizon taken into consideration - usually insurance companies take into account period of one year and rule is that longer period implies more chances for the mistake in the results of modeling,
- the way of modeling risks interdependences,
- the value for estimation the assets and liabilities – book value of "best estimation".

Although the models are in a constant process of adaptation and they have their limitations, they are, however, a very powerful tool for risk management of insurance and reinsurance companies, because they represent the best estimates that the insurance industry has available on some risk. It is important for companies to be able to understand the models and contextualize their use in the process of decision making. Regardless of risk modeling advantages, companies cannot rely solely on the application of the

model, but they must be combined with expert opinion, in other words, in the process of risk acceptance is necessary to ensure an adequate balance of skill and science.

5. The best way for using models

The basic question for insurance and reinsurance companies in applying the model is how the best available models can be used in the process of risk management and pricing. There are several approaches to address this issue, which include taking into account the uncertainty as inherent features of modeling, simultaneous use of multiple models and avoiding reliance of the overall business on a single model. Most of the models explicitly considers the uncertainty inherent to the modeling process, whether it is a primary uncertainty, caused by a wide range of events that may occur, or secondary uncertainty that occurs as a result of the stochastic nature of actual damages. Evaluation and incorporation deviations from the results because of the uncertainty contained in the modeling is essential.

Another way to deal with the variability of models and deviations in results of some models is multimodeling or systematic use of several different models for the pricing of risk accepted in insurance coverage. Using a single model limits understanding of the potential deviations of the model results. Although companies are able to freely change the used models, because of consistency and credibility they can not change the reference models from year to year. Some insurance companies have tried to solve the problem of using just one model by getting a secondary thinking of model from their brokers. This, however, does not allow companies to understand completely the reasons that lead to deviations between the claims and/or to realize potentially financial benefits of the identified differences. Also this does not allow companies to use information for the pricing of risk, risk selection or avoiding the impact of changes in the models. Bearing this in mind the only way that insurers and reinsurers take advantage of multiple models is to integrate them into their risk management practices through their combination and mixing their results, ie. through determining the average values of results. This approach is based on the observation results of different models as expert opinions and if the opinions vary, this is a signal that they must be taken into more detailed consideration. When it comes to choosing the model to be used, usually the decision on using the main model is based on a compromise, such as for example the requirement that the model fits the organizational or business structure, ease of use, technology and the like. However, in the selection of the second and each subsequent model, the basic principle which should lead insurers is the robustness of the model based technology. The multiple use of models simultaneously provides reducing variability in operating results by ensuring adequate risk diversification. It is important to insurers from the point of effective management of risk exposure. Also, the total variability is reduced by minimizing the dominant influence of any single model.

6. Model changes and impact on the business of insurance companies

Insurers and reinsurers are constantly reviewing the risks they are exposed to and accepted in the insurance coverage, followed by the risk modeling companies, that constantly review, update and improve the models. The results of these efforts will lead to improved accuracy of models for the different scenarios of catastrophic events. Along with the changes of factors that influence risk realisation, such as for example climatic and weather conditions or standards of construction, change the models too. Modifications of models cause changes in the business of insurance companies and are most visible in terms of the amount of insurance premium which varies conformity with changes in the model. It can be clearly be seen on the example of hurricane risk models whose changes, depending on the individual portfolio characteristics, lead to the changes in premiums range from a slight decrease to an increase over 200%.

Global warming is a phenomenon that is immanent to the world of today. Model changes have to include climate changes through modeling global warming, such as increasing probability and intensity of adverse consequences of the risk realisation. Models incorporate physics more and more, and reduce its dependence on statistical projections based on historical data, in order to represent the climate change better. If models incorporate the effects of global warming properly, they will be able to help the insurance industry to prepare itself adequately for long-term survival. Aftert the disastrous hurricane seasons of 2004 and 2005, the most significant changes in risk modeling occur in the the risk of

hurricane modeling. It is a fact that the probability of occurrence and intensity of the possible consequence of the impact of hurricanes have increased in recent years. It is about changes of input data such as data on the sensitivity of buildings. Some buildings can have different hurricane sensitivity, although they are built from the same material and on the same location, but have different density, so that a hotel can be riskier than an office building. The model begins to incorporate the risk of floods too, because hurricane risk can be followed by risk of floods. The model also begins to take into account the risks of reduced supply of labor and materials that usually increase the cost of reconstruction. Before the hurricane season of 2005, Risk Management Solutions calculated these additional costs at the level of 26% of insured losses and – after these tragic events – at the level of 40%.

Conclusions

Since the 1990s, advancements in information technology have enabled wider application of sophisticated risk modeling. Risk modeling provides insurance companies with a much better understanding of the nature of risks they accept, insurance coverage and thus more precise determination of adequate price of risk. The application of computer supported calculations for modeling the possible damages helps insurance companies in implementing the strategy of risk-taking, decision-making on the purchase of reinsurance cover, and to comply with regulatory and rating agencies requirements. If models are integrated in the business of insurance companies, through quality quantifying risks, models can contribute to better risk diversification, improving the responsiveness to changes in the risk realisation and reducing cost of capital in terms of strategy adaptation or capital allocation. Models, however, are only technological solutions and there are some limitations in their application. Also, models represent a simplified picture of reality and their adequacy is based on the credibility of information they use. It can be concluded that the models themselves are not a comprehensive solution to the issue of risk management of insurance companies. Bearing in mind their advantages and disadvantages, it is clear that the models are necessary in the business of insurance companies, but cannot be applied independently of the common sense of actuary logic. It should also be noted that models for many risks have not even been developed yet, such as for example the risk of river flooding in Europe.

However, if their limitations and differences are known, and if they are combined with expert estimates, the experience and the human instinct models represent a powerful tool available to insurers and reinsurers in risk portfolio management. Further development of models, their constantly modification based on previous experience, and inclusion of more available data, primarily driven by the dominant role of the three leading companies *Eqecat*, *AIR* and *Risk Management Solutions*, will contribute to increased accuracy and therefore greater reliability of models, as a base for decision making in the business of insurers and reinsurers. SM

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Modern Management

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Abstract
Modern management, based on modern-day system-based approach, develops innovative methodologies as bases for future intelligent management methodologies. Developing such methodologies has resulted in the methodology referred to as Tauzović's General Continuum (TGC), applicable in solving management problems by using the activities: 1.P – Preparations (1.1. External /Ep/ – of needs /or demands/ of the system existence ←→ 1.2. Internal /Ip/ – system policies /opportunities as strategies/) → 2.A – Analysis (system support /or inputs/) → 3.S Synthesis (system supply /or transformation of inputs into outputs/) → 4.C – Control (assessment /or outputs/ of the system). The preparation stage involves induction, while the analysis, synthesis and control involve deduction. The general and particular problems of management preparations, analysis, synthesis and control were solved with its theoretical – TGCt – and practical – TGCp – applications and their combinations. The conclusion offers some recommendations for further innovative management research which should focus on: (i) mutual relations between managers (as loyal employees) and customers (as satisfied consumers); (ii) finding more adequate terminologies for the needs of future management; (iii) seeking new types of operations; and (iv) linking and associating a larger number of modern management researchers in order to seek new, innovative and intelligent methodologies of future management.

Keywords
Management, organization, operations, operations systems, external management, internal management, preparations, analysis, synthesis, control, Tauzović's General Continuum (TGC).

Introduction

As a comprehensive process of universal goal setting and attainment modern-day management has a significant role in structuring, functioning, improvement and further development of separate organizational units referred to organizational systems, or – organizations. Based on modern research, whose foundation is strategic, modernly called external, application of the overall quality management (Total Quality Management - TQM), it should result not only in further development of the current, traditional and modernized advanced practical and theoretical methodologies of modern systems management, but also in the identification, design, use, improvement and upgrading of the innovative practical-theoretical methodology of modern management of systems. Although it can be argued with a high level of certainty that such methodologies will be simpler for acceptance and highly usable in practical applications, they are not likely to be used so on daily basis in the foreseeable future, among other things because of the lack of the accompanying parts of management technologies (such as general management knowledge) and terminology needed by modern managers.

The lack of developed (or related) modern (systems of) management terminology represents a particular problem in research, presentation and explanation of the comprehensive functioning (process) of modern management. Because of this, (modern) management displays and interprets its contemporary processes with more liberal use of advanced, and often traditional, terms of management. Certainly the emergence of a new term must be accompanied by sufficient explanation on its significance in the modern management.

Systems Management Theory (as a practical theory that first "raises" real data, through information and knowledge, to the level of theory (and then "transforms" it into concepts) is based on the division of

a system into: (1) real (physical) and (2) conceptual (abstract), and the division into (i) natural, (ii) technical, (iii) organizational and (iv) social is usually applied for the basic division of real systems**.** The systems approach defines systems as sets of interrelated elements, components or subsystems (with their mutual relations) which, if working in harmony, can provide synergistic outputs. In the systems approach, systems of permissive borders or open systems, as opposed to analytical systems, which are considered to be closed, open systems are influenced by their environment, which may include:

1. general environment (economic, technical, financial, informational, political, social, etc. – as parts of the general market), or macro-environment and
2. working (determined) environment (competitors, suppliers, collaborators, customers/consumers – as parts of the target market(s), or micro-environment.

Starting from the general (→B1→B2→B3→B4→) and working (→G1→G2→G3→G4→) environment (Figure 1), management should feature at all modern (spiral) levels of management, namely: (1) the institutional (or top /T/) level (or level of planning /PL/ – →T1→T2→T3→T4→); (2) the strategic (S) level (or level of organizing /OR/ – →S1→S2→S3→S4→); (3) the operational (O) level (or level of directing /DI/ – →O1→O2→O3→O4→); and (4) the control (C) level (or level of controlling /CO/ – →C1→C2→C3→C4→), or its separate parts – (1) external (E – levels of planning and organising /in advanced sense known as strategic/) and (2) internal (I – levels of directing and controlling /in advanced sense known as operational/) (/spiral/ shown in Figure 1). In order to manage modern systems or their individual parts, they need to be modernized, i.e. provided with the organizational (or operations) functions (/i/ marketing, /ii/ resources, /iii/ operations and /iv/ finances), so that they become organizational (or operations) systems. This particularly applies to the natural, technical and social systems used at the appropriate levels of (organizational) management. Since design and improvement of the system can be considered to be modern methodologies of modifying (changing) the system, design and improvement of modern systems are performed on the external part, while the design is done because of more significant and complete environmental impact, and the improvement is mainly done due to lower or increased influence of internal part of management.

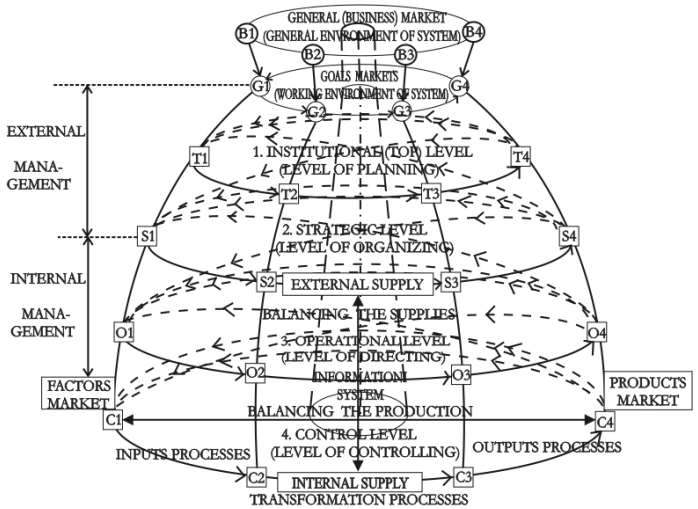

Figure 1 The model of modern management
Source: Tauzović, 1998

Modernized advanced strategic (contemporaneously called exterior), also based on operational (contemporaneously called internal) application of TQM in solving practical problems of (systems) management, is gaining increasing importance in its use. Among other things, it represents a convenient basis for advanced innovative managemnet processes of (re)design, improvement and the all-embracing management (research and management /in the narrow sense/) of the modern systems. Among these innovative methodologies, modern methodologies of (research and) management, based on a comprehensive development of business (as a special type of organizational) systems, starting from work unit

(as a busic organizational unit /system/), i.e. the main systems unit of business organization, then its production system, its (modern) operations systems, the business organisation itself, to its system of direct (working – as a goal /market/ markets) and indirect (general – as other markets) environment, as the main parts because of which the observed whole (/business/ sistem or organization) exists, play a particularly important role. In these considerations, the existence of (modern) operations systems as extensions of internal (operational) system components, i.e. expansion (or upgrading) of advanced operations (organizational functions) of marketing (MA), resources (RE), operations (understood in a narrower /or production and service/ sens**e** – OP) and finances (FI) stands out. By conducting the advanced research of the general traditional hierarchy of systems, the existence of operations systems, as basic and major components of organizational systems, was also proved, which was crucial for the establishment of new methodologies for their, also general, management. Since they represent basic and major parts of (business) organisations, they have to participate in (both preparation and) making all management decisions, because they are the only ones who can understand, accept, further improve and implement decisions made in this way.

For contemporary research, operations systems can be defined as interrelated sets of extended operations (of modern) systems. Assuming that a (contemporary) management of all systems, including operations, is a methodology for the successful management both in the present and in the near future, it can be accepted that it something does not have to be constant and always good enough and could not be further improved, and modern managers are required to seek a more permanent – more innovative management (systems) methodologies. Since determining new methodologies can also confirm and extend the validity of certain parts of the existing ones, the managers are required to make management metodologies, as the results (products) of their research, comprehensive, (high) quality, reliable, effective, efficient and competitive. Only by having such methodologies at their disposal, modern managers can expect their systems to acquire, maintain and expand competitive positions in their environments, and their operations systems, with their productivity (contemporarily shown by the most powerful systems measure – as a relation between effectiveness and efficiency), to support strongly the competitiveness of organisational units (i.e. systems) to which they belong.

1. Development of management metodologies

The need for management, decision making and implementing occurs when a problem has to be removed or a demand fulfilled. Since the process of decision making and implementation represents a special kind of reasoning (i.e. thought process), it basically has to meet the comprehensive process of acquiring knowledge about problem solving or demand fulfilment, including the influence of (direct and indirect) environment not only in solving, but in their application too.

Although there are many conceptual processes used in (research and) management, these considerations are based on the belief that René Descartes (1596 - 1650) first "concluded" in his *Debate on Method* (1637) that the thought process should have a certain sequence, which has to be formed regarding: (1) the principle of evidence, (2) the principle of analysis, (3) the principle of synthesis, and (4) the principle of verification. Since the stated principles are the stages of the thought process, which are usually used in the present time, in an analytical and non-systems way, of any rational consideration, as well as decision making and implementation, they can be taken as a basis for the development of further problem solving matodologies and decision implementation, as well as for comprehensive management processes. Assuming that they have analytical nature, i.e. they are internally focused, with the appropriate extensions, therefore using (contemporary) systems approach, they can be used for research into not only systems and their management, but also in their expansion (and upgrades), as well as in their (other) environment. This means that, by the appropriate innovation of traditional analytical systems, (advanced and) modern, systems management procedures, can also be obtained, having the following functions: (i) planning (PL), (ii) organizing (OR), (iii) directing (DI) and (iv) controlling (CO) (Tauzović, 1998). The management functions of the system are performed at different levels of modern management, namely: (i) planning at the institutional (top) level, (ii) organizing at the strategic level, (iii) directing at the operational level, and (iv) controlling at the control level.

Besides Federick Winslow Taylor's remarkable management results at the beginning of the twentieth century, significant expansion of management methodologies occurs in the second half of the twentieth century, when Japanese practitioners (led by W. Edward Deming) "defined" a special management

philosophy, which implies that management processes must continuously: 1) be planned, 2) be performed, 3) be verified, and then also 4) operate, and continue in that way until the problem (in this case related to quality management) is resolved. Having in mind such reasoning, the initial definitions of this type determine that the Total Quality Management (TQM) of the (organizational) system products (goods, information, management and services) is a philosophy based on four basic principles: (1) intense focus on customer satisfaction; (2) exact activity measurement; (3) constinuous processes and products improvement; and (4) employee empowerment. Although different TQM bases are used as methodologies in the application of principles, i.e. philosophy, at the present time, they essentially fulfill, expand and upgrade Descartes' thought process and principles of Japanese practitioners, as well as the basic principles of TQM.

A detailed analysis of the results obtained from the modern research into operations systems (Tauzović, 1998), which had the use of modern systems approach (systems approach extended with TQM) as their basis, resulted in the significant conclusions that systems way of applying TQM determines individual and/or overall excellence of the system (organization). Since systems management, including operations and (productive) business includes external and internal part (each of which contains two levels – focused on planning and controlling) (Tauzović, 2009), all considerations fundamentally related to the modern study of organizations must be particularly examined through their total internal (progressivelly called operational) and external (progressivelly called strategic) parts, and always in their cause-effect relationship in relation to the (productive) business, thus the organizational (working and general) environment. This is particularly important in studies of excellence (of the operations) of an organization, which at the present time must be considered through operations (operational, productive) and business (strategic, organizational) excellence. The Total Quality Management is used as a basis for studies on operations excellence (Tauzović, 1998), while practical theories and their improvements obtained from leading organizations and organizations of fast response (Fast-Response Organizations – FRO) (Noori & Rodford, 1995), as extended and modern use of TQM, are used for achieving business excellence (Tauzović, 2009). Therefore, by the operations implementation TQM, operational excellence is achieved as a result of productivity (or profitability), while organizational TQM implementation leads towards the competitiveness of an organization (namely its operations systems), which means that is also obtained by using business (organizational) implementation of the operations philosophy TQM, modern philosophy TQM, known as FRO philosophy.

In order to achieve, maintain and develop a comprehensive competitiveness, the organization should follow the practice of successful organizations, which shows that they have invested considerable resources in certain structural assumptions for improving operations. The following are said to be the most important structural prerequisites for these purposes: (1) (investments in) research and development; (2) integration of resources (people and facilities); (3) adoption of new technologies (as the totality of knowledge used in a wider process of production, even in operations systems); and (4) continuous improvement (across the whole organization). Although the above structural prerequisites should be treated equally, it was concluded in practice that new technologies (in the broadest sense – as the totality of knowledge) have the greatest impact on the operations of the organization and their management. Positive management attitude towards modern technologies must include acceptance of all forms of technology: (1) brainware, (2) software, (3) hardware and (4) naturalware. The total acceptance of these technologies can be divided into: 1) external – brainware and software and 2) internal – hardware and naturalware. The change of applications emphasis from internal to external forms of technology is an essential characteristic of "change" from TQM (as an operations application) to FRO (as the TQM business application). Therefore, the modernization of TQM, as the operational excellence – already achieved in the systems – leads to the FRO, as a business (organizational) excellence of an organization. Since the contemporary inadequacies of TQM stem from the fact that the organizations used to be designed according to their physical "property", they are now designed or organized by the use of intellectual property (including also intelligent) resources, having the essential authority and a larger number of smaller, acceptable (goal) markets. It is why the organization around the basic physical resources of the organization has been changed over intellectual (further directed towards intelligent) resources, which should be valued up to enable organizations, first, to survive the changing environment (of the business world), and then to develop.

A detailed systems research into modern TQM application, made it possible to further expand and upgrade the available methodologies for organizations management, especially observing (basic and major components) of operations systems. Based on systems analysis of modern management models (Figure 1), such expansions and upgrades can basically be shown with Tauzović's General Continuum (TGC) of (all-embracing) management, which may have, in addition to the general, external (primarily intended for external components or external levels of systems parts) and internal (primarily intended for the internal components or internal levels of systems parts) direction. A detailed analysis has enabled its further development, which, at the present time, represents a modern (systems) management methodology.

Modern systems approach and analysis of results obtained through comprehensive research carried out within the research project "Modern Management of Operations Systems" (Tauzović, 1998), may lead to systems synthesis so that components (or functions) of operations systems may be globally – theoretically and practically – shown and studied in terms of certain areas of activity (processes), namely: 1.P – Activities of preparations (1.1.Sp – External and 1.2.Up – Internal), 2.A – Activities of analysis, 3.S – Activities of synthesis and 4.K – Activities of control. Further analysis and detailed research of such relations lead to cognition on what kind of relations may basically be used for theoretical and practical needs (of management) through:

{→ 1.P – Activities of preparations (1.1.Ep – Activities of /total/ needs /or requirements/ for the system existence ←→ 1.2.Ip – Activities of system policies /opportunities or strategies/) → 2.A – Activities of system support including improvement (or inputs) →3.S – Activities of system supply (or transformation of inputs into outputs)

→ 4.C – Activities of system assessment (or outputs) →} (Figures 2 and 3).

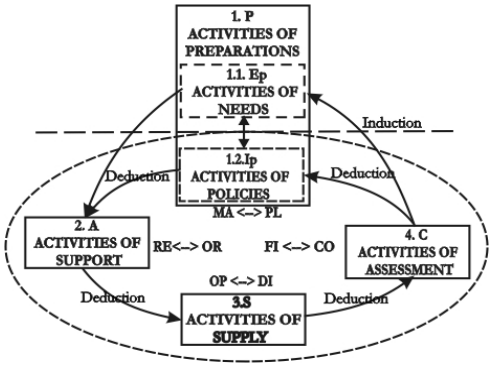

Figure 2 Theoretical Tauzović's General Continuum (TGCt)
Source: Author

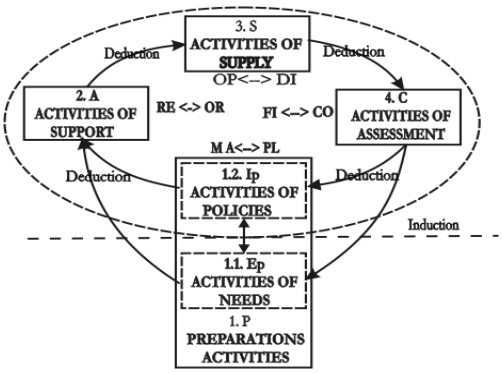

Figure 3 Practical Tauzović's General Continuum (TGCp)
Source: Author

With this innovative (modern systems) methodology, called Tauzović's General Continuum (TGC), it is possible to resolve problems of the system and all-embracing management, through subsequent use

of the continuum of four sets: (i) cyclical, (ii) iterative, (iii) continuos and (iv) spiral activities in TGC, based on modern model of operations systems management consisting, apart from the level of the working /and general/ environment, also of four levels: /1/ institutional (planning), /2/ strategic (organizing), /3/ operational (directing) and /4/ control (controlling) (Tauzović, 1998). Such a management methodology can be divided into two parts:

(i) inductive part – consisting of 1.P – Activities of preparations (1.1.Ep – Activities of needs /or requirements/ and 1.2.Ip – Activities of policies /opportunities or strategies/) (→1.P/→1.1.Ep← →1.2.Ip/→) and
(ii) deductive part – consisting of 2.A – Activities of support, 3.S – Activities of supply and 4.C – Activities of assessment (→2.A→3.S→4.C→) (Figures 2 and 3).

Through the TGC application, as a modern (systems) management methodology, it is possible to conditionally display it as a modern: (i) theoretical, social-organizational or external application, mostly directed to "soft" systems (social and organizational) (Figure 2) and (ii) practical, modern natural-technical or internal application, primarily referring to modern (supplied with organizational functions) traditionally called "hard" systems (natural and technical) (Figure 3). Various presentations (forms) of TGC application are directed to a more acceptable understanding and monitoring of their use in all-embracing management (research and management /in narrow sense/) of various types of modern systems. Such presentations of systems management offer good basis for further founding and general development of future management methodologies.

When it comes to overall management, then the TGC application may be considered, in addition to the overall one, in particular contexts too. Apart from the (general) external (as theoretical – TGCt) and (particular) internal (as practical – TGCp) application, it is also applicable to each part or management level separately, and is even applicable to certain parts of management levels. In all cases of TGC application, the prior procedure refers to **what** should be done (as induction), and the subsequent one to **how** it should be done (as deduction), which again becomes **what** should be done, etc.

2. Organisational (operations) systems management

The relatively short Tauzović's General Continuum (TGC) application not only confirmed many existing solutions and solved some of the unsolved operations problems, but it also discovered some flaws of earlier, both traditional and advanced methodologies, not only in business systems, but also in other economic, and theoretical assumptions (Tauzović, 2009). A particularly important result obtained by using TGC is the determination of the necessity of operations system of (business) organizations existence (originally defined as sets of extended operations of organizational functions – marketing operations, resources operations, operations operations /understood in a narrow, or productive-service, sense/ and finances operations). The need for operations system existence also required complement and need to redefine and modernize the (traditional) hierarchy of (business) organizational systems. The initial levels of this hierarchy were: 1. employees system, 2. system of organizational units, 3. system of business organization, 4. economic system of free endeavors, 5. homocentric system, 6. the Earth system, 7. the Solar system and 8. the Universe (Cosmos), while the refined hierarchical levels of organization systems are: 1. resources system (as internal preparation or a basic organizational init - 1.2.Ip), 2. system of organizational units (analysis – 2.A), 3. operations systems (synthesis – 3.S), 4. system of (business) organizations (control – 4.K), 5. economic system of free endeavors (external preparation - 1.1.Ep), 6. homocentric system, 7. the Earth System, 8. the Solar System, and 9. the Universe (Cosmos).

If thus already innovated, regarded as a progressive, the hierarchy of (business) organizational systems were compared with comprehensive business systems, then the modern hierarchy of business systems could be defined as: 1. work unit (/the basic organizational unit/ as an organizational system consisting of human subsystems and technical resources subsystem), 2. productive system, 3. operations system, 4. system of business organization, 5. market system of certain business activities (as target markets), 6. system of the business market (as a general /business/ market), 7. the system of the world market, 8. the Solar system and 9. the Universe (Cosmos). Such a comparison especially emphasizes the importance of operations systems (/business/ organization).

These considerations are based on the first six hierarchical levels (systems), as follows: 1. work unit (as the basic organizational unit /system/ consisting of technical and human resources intended for the

performance /safety/ of one /specific/ type of work), 2. production system (as an organized group of work units intended for the performance /production/ of specific products /as business transactions – goods, information, management and services/), 3. operations system (as an organized set of all /designed/ productive facilities /or production systems/), 4. organization (as an organizational system specified for meeting specific needs /working and general/ environment), 5. markets of certain business activities (as a target market /working environment/) and 6. business market (as general business market /general environment/). The first four hierarchical levels (systems) belong to the organization, while the last two are its environment. (When it comes to utility systems, then appropriate hierarchical levels /systems/ of interest to these considerations can be analogously determined.) Since research for these purposes have been previously done in detail for the systems of (maritime) shipping (shipping organization and its /working and general/ environment), as traditionally the most international business, its analogous hierarchical levels (systems) would be: 1. ship (the basic organizational system /work unit/ made up of technical /shipbuilding product/ and human /crew/ resources intended for maritime transport /transportation/ of certain types of cargo /people/), 2. maritime transportation system (a set of ships designed for a specific set of transportation /transports/), 3. fleet system (all ships of an organization), 4. shipping company (the system intended for the production and providing of shipping /transportation or transport/ services), 5. shipping market (transport, travel and time, as the target markets /of working environment /) and 6. maritime market (comprehensive market of maritime transportation /transport - as a general environment/).

2.1. Management preparations

Having in mind the fact that, to achieve its objectives, the modern management in general can be defined as a process of effective and efficient union of (extended) operations – marketing (MA), resources (RE), operations (OP) and finances (FI), and management – planning (PL), organizing (OR), directing (DI) and controlling (CO) – function (Tauzović, 2009), the modern management of (real) systems should be particularly "adjusted" to their general and working environment. For such an adjustment, managers are involved (dealing with) in the four management functions – planning, organizing, directing and controlling that are applied to environmental, human, physical, financial and informational resources, with the ultimate goal (to determine and) to achieve the objectives of the system (organization) effectively and efficiently. Since, based on the vision and development mission (of purpose) of the existence of the system, (1) planning is the process of: (i) determination of goals (and their policies /strategies/) to be met, and (ii) making plans to lead the system so that the objectives can be achieved, (2) organizing is the process of determining the composition of working groups and the ways in which they work and activities coordinated, (3) directing is the process that affects the execution of business (transactions) in the realization of common goals, and (4) controlling is the process of: (i) estimation of results in relation to expectations (planning) and (ii) making any changes (improvements, if the plan has not been achieved) (Tauzović, 2009), the main (1) planning, using (based on external) marketing, done in preparations, (2) organizing resources in analysis, (3) directing operations (based on internal marketing) in the synthesis and (4) controlling the finances in the management control.

Management of modern operations systems, as basic and major components of modern systems, is of particular importance for all economic activities, i.e. what people do in the absence of resources to overcome shortages. Since all contemporary (modern) units (systems) management is defined as a process of effective and efficient union of: (i) marketing for purposes of planning (MA←→PL), and that (ii) resources are organizing (RE←→OR), (iii) operations are directing (OP←→DI) and (iv) financies are controlling (FI←→CO), modern management can be represented as the four basic activities of Tauzović's General Continuum (TGC) - (i) preparations (1.P / 1.1.Ep /needs - MA / ←→/1.2.Ip /policies - PL/), (ii) support (2.A - RE←→OR), (iii) supply (3.S - OP←→DI) and (iv) assessment (4.C /including improvement/ - FI←→CO) (Figures 2 and 3).

Even when it comes to modern (research and) management, together with the development of operations systems, the "considerations" are usually based on the achievement of a definite (general /external, projected/ and individual or specific /internal, production/) quality of future products of the system, which would be the basis for the system to enable (general and individual /working/) competitiveness in its environment. Since modern principles of Total Quality Management (TQM) are used for these purposes, TQM has to be based on reliable determination of the real (practical) data. A detailed systems

analysis led to the conclusion that the level of: (i) controlling must use real (practical) data, (ii) directing the information (obtained from real data too), (iii) organizing knowledge (extended by information of the real data) and (iv) planning theory (supplemented by the knowledge determined on the organizing level) (Tauzović, 1998), while (especially working) concepts (as distinct ideas and views based on relevant theory and practice /experience/) are used for the management of (or compliance with) the environment**.** Having this in mind, in the research of system, after a certain preparation in the "environmental levels" (general and working environment) and "preliminary" planning (as preparations), one starts from controlling, then directing and organizing, and finally to the level of planning (as analysis), where, by including environmental influences (working and general), decisions on purpose of "existence" of the organization (system) which is a basis for determining the goal of the system are made (or established). Besides the determined system goal, decisions making and implementation (thus managenmet in the narrow sense) is performed from the level of planning, then organizing, directing and controlling (as synthesis), and the final "verification" is performed at the level of planning (as an assessment), which represent the primary (and major) application of TGC. This sequence of all-embracing management, thus research and management (in the narrow sense), has determined the specific ways of applying Tauzović's General Continuum (TGC). It also points out that its practical form – TGCp – should be used for the research areas, and its theoretical – TGCt – form – for management. Further research into the TGC application led to the concluson that the theoretical form is suitable for external, and practical for internal /both parts or levels in the parts/) management (Tauzović, 2009). Analogously, special forms (of application) of TGC can be used for design (as an external management) – a theoretical form, and for the system improvement (as the internal management requirements) – a practical form. Consequently, the overall management consists of research and management (in the narrow sense). The research of a system, (mostly) based on needs of the target market, starts from the lowest level – controlling (control), then it continues at the level of directing (operational) and organizing level (strategic), ending at the level of planning (institutional /top/), whereby four practical TGCp.s are used in such a way that the synthesis of the previous TGCp represents the external preparation of the next TGCp. For management (in the narrow sense), decision-making (including determining the goal of the system) is performed at the level of planning (institutional), continues on the organizing (strategic), directing (operational) and controlling level (control), from where it is controlled whether or not the system has implemented the decisions (achieved the goal). When managing, four theoretical TGCt.s are used in sequence, analogously connnecting all TGCp.s as in a research.

Since modern management can be divided into external (E) and internal (I), parts of management can be further divided into two levels each, namely: (1) External – Planning (PL – which takes into consideration the external preparation of planning/organizational or external marketing – MAE) and (ii) organizing (OR), and (2) internal - (iii) directing (DI - including its external preparation /production or internal management/ of internal management as the part of the external management – MAI) and (iv) controlling (CO). Planning operations (PO) and the design of operations (DO) are achieved by the use of external management, while internal management is used for contracting (CN) and performing operations (PR). While designing (redesigning) the system, the target /market/ markets (working environment) are chosen from overall marekts (general environment). For improving the system, the system already designed is (maximum possible) adjusted to better achievement of its goals (working environment). Internal management (which can involve improvement, too) has the target markets as its basis.

As a single unit, the internal and external management of (organizational /operations/) systems – with its constituent parts, constitute mutually cyclical, iterative, continuos and spiral continuum. Each part of their management gives a unique contribution to all-embracing decision-making and implementation. Systems management structured in this way, through the management process, enables an open, complex, stochastic and dynamic system to reach the system goal (needed to management), in which it is possible to make a unified decision in a more closed and simple manner, and as close as possible to the deterministic and static conditions (hence, the system). In the process of such adaptation of a (modern) operations (organisational) system for decision-making and implementation:

(i) at the institutional (top) level – planning level (PL) an open system adapts to possible closeness by using heuristic procedures;
(ii) at the strategic level – organizing level (OR) a more closed system is presented as simple as possible by using simulation procedures,

(iii) at the operational level – directing level (DI) a simpler system, is converted into the best possible deterministic system by using statistical procedures and
(iv) at the controlling level – control level (CO) such a deterministic system is practically adapted or seen as much as possible statically, by using algorithms (optimisation procedures).

In designing operations, in addition to (i) preparations activities (external and internal), (ii) support activities (as external inputs), (iii) supply activities (as external transformation of inputs into outputs), and (iv) assessment activities (as external outputs) are determined as well. Special consideration is given to determining the external (activities) supply as a synthesis of external management (S2→S3) (Figure 1), i.e. a comprehensive supply for which the system has been designed (implemented in the external part of the management). Considering such supply as external one, it can be viewed as an organizational supply. Analogous consideration of operations performance, the internal supply activities, represented by its synthesis (C2→C3) (Figure 1) can be viewed as an internal supply that is being implemented in internal management. Since the system can internally provide, thus produce (perform), maximum of produsts which external supply allows, internal supply (determined in the production system) can be considered as a part of external supply.

In addition to the target market(s), external and internal supply, for management purposes, there are factors market (as the input of the internal part) and the products market (as the output of the internal part of the system) (Figure 1). Both the activities of these three markets and two supplies meet TGC activities, namely: { →1.P – Activities of preparations (1.1.Sp – Activities /needs/ of target markets→← 1.2.Up – Activities /policy/ of the external supply) → 2.A – Activities (support) of factors market → 3.S – Activities (supply) of the internal /as patrs of external/ supply → 4.C – Activities (assessment) products market →} (Figure 4). TGC of markets and supplies systems can be divided into: (i) inductive (→ 1.P /1.1. Sp →← 1.2. Up/ →) and (ii) deductive (→ 2.A → 3.S → 4.C →) part.

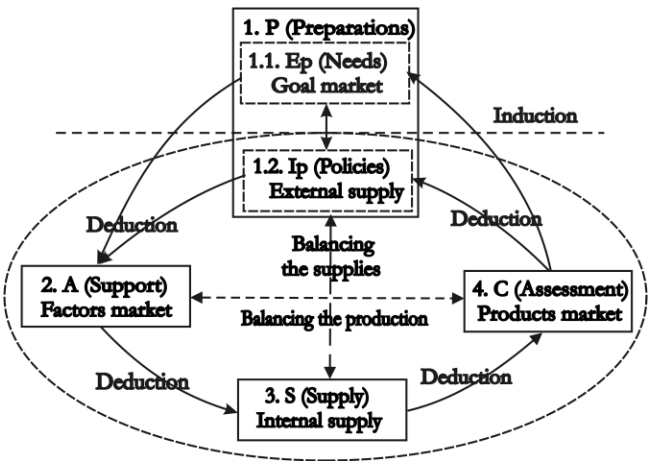

Figure 4 Tauzović's General Continuum (TGC) of the markets and the supplies of (organizational) system.
Source: Author

The following are especially significant in modern management model (Figure 1): (1) balancing the supplies – external and internal, and (2) balancing the production – products and factors market (shown in details in Figure 4). In balancing the external and internal supplies, one must take into account the following: while designing the system, its functioning must be ensured too, so that the system (organization) can competitively "supply" the market of certain products with more of what target markets are seeking, through internal supplies, and thus provide maximum possible income (from sales of products – goods, information, management and services). Production, i.e. factors and products markets, "determination" of lower products production costs and "holding" their inventory (raw materials and finished products) at the lowest acceptable level (to reduce such costs too) are of the particular importance for balance. Balancing the supplies, from all external, more suitable, smaller-scale operational target markets for specific products are chosen. Therefore, balancing the external and internal supply should enable obtaining the largest possible income (external synergy), while balancing the factors and products

markets need to reduce costs (internal synergies), and thus ensure maximum possible competitiveness (based on productivity) or profit (based on profitability) as organizational synergy for the organization.

2.2. Managament analysis

With the preparations well done (subchapter 2.1.) the basis for the successful completion of analysis is created, i.e. analyzing the process management. In order to simplify its monitoring, the abbreviations will be used, such as:

(i) one-letter – the TGC activities (preparations, analysis, synthesis, controls /P, A, S, C/) and parts management (external /E/, Internal /I/),
(ii) two-letter – the management levels or management functions (planning, organizing, directing, controlling /PL/, /OR/, /DI/, /CO/), and combinations of TGC activities (as the first letter) and management parts (as the second letter), so that for PE is used for external management preparations, PI for internal management preparations, AE for external management analysis, SI for internal management synthesis, CI for internal management control,
(iii) three-letter – in addition to TGC and TQM, the combination of TGC actions (P, A, S, C) and management level (PL, OR, DI, CO), as well as the external and internal parts of TGC preparation and management parts – so that PPL is used for planning preparation, AOR for organizing analysis, SDI for directing synthesis, CCO for controlling control; as well as PEE for external preparation of external managemen (or externet markeing – MAE), EPI for internal preparation of external management, PIE for external preparation of internal management (or internal marketing – MAI), and PII for internal preparation of internal management (Figures 5).

Different forms of a general (modern) management methodology called Tauzović's General Continuum (TGC) provide many opportunities for their use. As the same goal can be achieved in different ways in a systems approach, the use of a TGC will be further analyzed only for systems management based on the parts that basically uses the analogy between **Mathematics** (as an abstract science) (→ 1.P /1.1.Ep – Mathematics ←→ 1.2.Ip - Applied Mathematics / → 2.A – A special area of Applied Mathematics → 3.S – Determination of general solution in specific areas → 4.C - Determination of the particular /special/ solution in a specific area) and **Management** (as a practical /natural/ science) (→ 1.P / 1.1.Ep – Management ←→1.2.Ep – Systems Management Theory /as a practical theory which "raises" practical /natural/ data to the theory level/) → 2.A - Business systems → 3.S - System design → 4.C – Production /of products/ system). Analogous application of theoretical and practical TGC the systems management is performed by using its levels. Thus, the general management solution includes its design, while the special /particular/ management solutions involve the production of certain products. Management systems based on management parts (external /E/ and internal /I/) can be considered to be modernized and advanced management using theoretical and practical TGC.

Detailed analysis of the external (in planning and organizing operations /rganization/) and internal (in directing and controlling the operations /production system/) the modern management model (Figure 1), presented in detail by balancing (external and internal) products and markets (of factors and products) (Figure 4) is a starting point. For management purposes, in this way one can start from a more suitable view of the modern management model by dividing it into external and internal management (parts), on the mutual border (→S1→S2→S→S4→) (Figure 1) and bringing syntheses of the external (organization /operations design/ operations), and syntheses of the internal (operations control) management in direct connection. Therefore, the theoretical TGCt of external management and practical TGCp of internal management are connected through their syntheses 3. SE←→3. SI (Figure 5). Having this in mind, (modern**)** system management, shown in Figure 5, can be divided into:

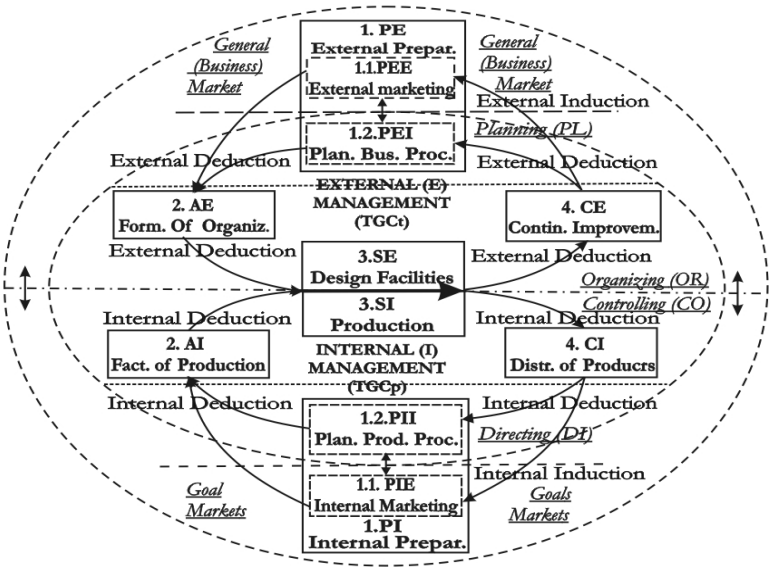

Figure 5 Model of managing systems based on parts
Source: Author

1. External management part (E – as /planning and design/ production facilities or operations systems), based on the theoretical TGCt which includes: (i) the level of planning activities 1. PE – external management preparations, as follows: 1.1. PEE – External marketing (MAE) at business (general) market (for creating the conditions for individual or group participation /including suppliers, cooperators and competitors/, and thus determining the target markets /for the needs of internal management part/) and 1.2. PEI – Planning (business as external) processes (the use of modern procedures and making significant innovations in the preparations /structures and ways of performing business for target markets' needs /), and (ii) the level of organizing activities 2. AE – Formation of Organization (or the Business Union /alliance/ – determining whether to participate in the overall market in the union /group, association/ with other organizations /including supplying, cooperative and competitive/ or independently), 3. SE – Design (production) facilities (providing the union or organization with critical competitive advantages, share increase in /selected/ target markets, better negotiations with suppliers, cooperators and competitors, as well as the ability to prevent /not included/ competitors to participate in their parts of target markets), 4.CE - Continuous (quality, productivity, customer service and competitiveness) improvement (promotion) (Tauzović, 2009). This part of management (thus, design /production/ of facilities or operations /operations systems/), determines the target markets for the purposes of internal management. Its decisions are very indefinite and very stochastic, since the areas of decision-making are long-term and short-term predictions.
2. Interior management part (I – as a production /and distribution of individual/ product), based on practical TGCp, which consists of: (i) the level of directing with activities 1. PI – Internal management preparations, namely: 1.1. PIE – Internal marketing (MAI) at goal (working) market (determining appropriate target markets for the production of products /goods, information, management and service/, gaining income from advertising and sharing documents accompanying the products) and 1.2. PII – Planning with improvement of production (production facilities) (exchange of agreements /messages/ between business and production "subjects"), and (ii) the level of controlling with the activities; 2. AI - Factors of production (suport) (contracting and payment options); 3.SI – Production (creating products /goods, information, management and services/); 4.CI – Distribution of products (product delivery to the final costumer with /end/ receiving the income for produced products) (Tauzović, 2009). Its decisions are moderately stochastic and deterministic, while the area of decision-making is a short-term and immediate application.

This kind of systems management: (i) on the external part, starting from the general market, the system is adjusted, from open and complex, sufficiently closed and simpler part on the basis of which the system is designed, and thereby determine the target markets, and (ii) on the internal part, starting from the target markets, the system is adjusted, from stochastic and dynamic, with the deterministic and static conditions for production of products.

The system (planning and organizing /design/ operations) for internal management purposes is designed, and thus the (target) markets of (business) activities are determined by the external management, based on a survey of business (general) market on the one hand, while on the other, the internal management (directing and controlling of /production/ operations) is therefore used for examining whether it is possible to produce a specific product in a satisfactory manner for both the customer (consumer on the target market) and the manager (employees /producers/ – in the system). If this is possible, the product can also be produced, otherwise one moves to the external management from 3. SI – Production (product creation /as internal supply/) to 3. SE – system design (as external supply), and the possibilities of producing products by improvement and redesign of the system are subsequently explored (Figure 5).

Hence, modern management is carried out by using Tauzović's General Continuums (TGC), the activities of which are P, A, S, C, through external (E) and iternal (I) management (Figure 5). External management is used for the design of operations (organizational) system, while the internal management is used for determining the production system. {→ PE → AE → SE → CE →} is used for the external management, while {→ PI → AI→ SI → CI →} is used for the internal management. Although these two parts of management may be seen separately, system management is performed using the following process:

{→ PE → AE → SE (→ CE → PE → AE → SE) ←→ (SI → CI → PI → AI) SI → CI → PI →},

where the possibility to control specific parts of management is indicated in parentheses.

The overall research on management, based on parts shown here, includes virtual operations management (the electronic business operations /e-business/), in which electronic commerce (e-commerce) is considered to be internal (progressively operational) management, while electronic business (in the narrow sense) is considered to be external (progressively strategic) management (Tauzović, 2009). Since electronic business management can be considered through its levels (/i/ the presence on the web, /ii/ electronic commerce, /iii/ electronic business and /iv/ intelligent electronic business) (Kalakota & Robinson, 2002), such management can be considered as a management based on the parts (consisting of two levels each).

2.3. Management synthesis

As a single entity, external and internal management systems (organizations) with separate levels, represents a mutually cyclical, iterative, continuous and spiral continuum. Each management part (level) provides a unique contribution in decisions making and implementing, thus making it possible, in the management process, for an open, complex, stochastic and dynamic systems, as their main characteristics, to come to the target system (needed for the management) in which a unanimous (compromise) decision can be made in more closed and simpler - as part of external management, and as close as possible to deterministic and static conditions (thus system) - as a part of internal management.

On the basis of more detailed (systems) analysis of individual management parts (presented in subchapter 2.2.), it is possible to determine their (systems) syntheses as a basis for making decisions about the existence (and the goal) of the system (organization) and subsystems (production system). Determining the synthesis, the target markets are determined too, where the products (goods, information, management and services) produced in the production system will be distributed. As the synthesis of management determines the (overall) system, it should be done through the (compromise) optimization, first, for the external part – as the optimization of the system (organization), and based on the optimization, or in accordance with it, determined (a compromise) suboptimization of the internal part – as the optimization of subsystems (production system) (Figure 6). To sum up, based on obdained optimization of the organization (made in the external part) the optimization of the production system (the internal part) is determined, usually expressed as the mean value of the optimization of certain products production.

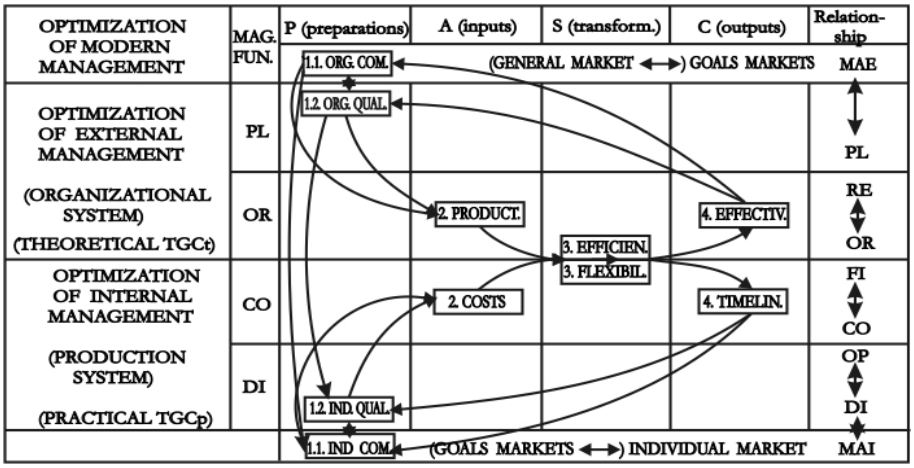

Figure 6 The optimization of the organization (system) and its production system (subsystem)
Source: Author

Although advance management could have accepted the possibility for both optimizations to use the same evaluation measures, in modern management it is possible to use different mutually harmonised (analogue) evaluation measures, as follows: (i) for optimization of organization (system), i.e. its external part (sistem), the following measures may be used {→ (1.1. Organizational competitiveness /as general / ←→ 1.2. Organizational quality /as general /) → 2. Productivity → 3. Efficiency → 4. Effectiveness (Tauzović, 2009), and (ii) for optimization of an individual product (produced in a production, its internal part, /subsystem/) the following evaluation measures may be used {→ (1.1. Specific competitiveness /of products – as individual/ ←→ 1.2. Specific quality /of product – as individual/) → 2. Costs (of product production) → 3. Flexibility (of product production) → 4. Timeliness (product distribution /delivery/ at particular market) (Tauzović, 2009). Quality (intelligent) simulation (with which /relatively/ much information may be obtained by using few data) may be used as the basis of the organizational optimization (as system), and usually the quantity (technical) simulation (which provides /relatively/ few information based on a large number of data) is used for determining the optimization of a production system (that is, the mean value of production of all products – as subsystems).

The procedure of systems (and subsystems) optimization may be formulated in its general form as the totality of the function of criteria F(X) and a set of limitations D, i.e.:

$$(\text{optimum})Y = (\text{optimum})F(X)$$
$$\text{set of limitations } X \epsilon D,$$

where: (i) D is the possible area not depending on variables $X = (x_1,\ldots, x_n)$ and (ii) $Y = (y_1,\ldots, y_m)$ depending on the variable (Tauzović, 2009). Hence, sets of allowed values of inputs x_i (i=1,…,n) determine the best possible outputs $\hat{y}_j$ (j=1,…,m) essentially based on the use of experimental procedures, simulations procedures, statistical techniques and optimization-algorithm processes (Tauzović, 2009). The most frequent methods used in optimization of systems (organization) are the methods of analytical hierarchy and the multi-criteria comparative ranking, as heuristic approaches based on quality simulation, while the methods of direct search, generalised gradient, statistical and mathematical programming based on quantity simulation are used in optimization of subsystems (production system). Hence, the optimization of organization based on quality simulation and optimization of production system based on quantity simulation results in giving best possible practical solutions, i.e. compromise optimums are obtained (Tauzović, 2009).

The optimization model, based on simulation, may be given in the form of modern management methodology as follows: {→1.P – Preparations (1.1.Ep – External: as goals ←→ 1.2.Ip – Internal: as possible /management/ activities /of the system strategy/) → 2.A – Simulation: as possible development by inclusion and probability of occurrence of specific activity → 3.S – Optimization: as values (results) of specific activities obtained through simulation → 4.C – Selection of one activity: as the decision fulfilling the goals →}. Thus, the decision-maker has the goal, assessed results of specific (management) activities in terms of goals and selects one activity to be applied to meet the goal. In this optimization

model: (i) 1.2.Ip – Internal preparation, 2.A – Simulation, and 3.S – Optimization (as internal processes) form the integral or information simulation-optimization unit (as the totality of internal preparation, analysis and synthesis), and (ii) 1.1.Ep – External preparation, and 4.C – Selection of decision constitute the external or management-information unit (as the totality of external preparation and control of the decision made, with the possibility of seeking additional and/or external information). Optimiser may be either the full algorithm procedure or the automated computer programme, or else it may include the combination of the two.

The aim of modern optimization of an organization (system) is usually taken to be (i) maximum productivity (as modern evaluation measures, which may be presented as a ratio of effectiveness and efficiency) based on organizational (general) quality and (ii) determination of conditions for maximum possible (required) level of systems organizational (general) competitiveness (as the external evaluation measure) of organization. Since the "dimensions" of organizational (systems, general) competitiveness are usually taken to be: (i) organizational (general – needed) quality (ii) productivity (iii) efficiency and (iv) effectiveness, then optimization at the same time achieves their optimal values (when for quality only needed is required – the "minimal" value) (Figure 6). In order for an organisation (system) to respond to the optimization needs in modern management, it needs to be planned and designed based on the organizational (general) quality (shown through productivity that considers the external benefits of products directed to maximum revenues) in order to measure the related process in a comprehensive manner:

{→ 1.(1.1. "Maximum" /Sufficient/ Organizational Competitiveness → 1.2. "Minimum" /Needed/ Organiztional quality) → 2. Maximum Productivity → 3. Maximum Efficiency → 4. Maximum Effectiveness →}.

When it comes to the optimization of the production system or production of a specific product (production and distribution of products) then the optimization procedure is somewhat different. Based on the organization optimization, the optimization of product production achieves the optimal separate competitiveness (of products) at a specific part of the target market, and its basis is found in the specific (needed) quality shown through (profitability aimed at reduction of) costs (of products). The least costs of product production should be defined through the best flexibility and timeliness of product delivery at the relevant (specific) part of the target market. Therefore, the optimization procedure for individual products (as the basis for optimization of the production system) may be performed by using the following process:

{→ 1.(1.1. "Maximum" /Sufficient/ Individual Competitiveness ←→ 1.2. "Minimum" /Needed/ Individual Quality) → 2. Minimum Product Costs → 3. Maximum Product Flexibility →
→ 4. Maximum Timeliness of Arrival (Distribution) of Products to the Target market →}.

Therefore, determining the optimal modern evaluation measures for organizational (and their production) systems – quality, productivity, efficiency and effectiveness – their maximally achievable (sufficient) competitiveness is attained (for needed quality aimed at highest revenues), while it is possible to effectuate such optimizations in optimizing production systems. Only the organizations which base their management on optimizations may be able to base, maintain, add, extend and upgrade their target markets of business activities, as parts of the business (general) market. By optiong for the optimal management of (modern) organizational (operations) systems, based on harmonised internal and external optimizations, it is ultimately possible to make decisions on the existence (goal) of an organization and implement its decisions in management control (at the controlling level). Since modern systems, tend use profitability rather than productivity as a success measure (the former being easier to determine), electronic business can be considered as a path towards profitability (2P2-path to profitability) (Kalakota & Robinson, 2002).

2.4. Management control

Although the control is performed at all management levels for taking certain actions at those levels, ultimately control – hence management control, i.e. achievement of management goals – is done at the controlling level to verify for proper determination and the successful implementation of effectiveness and efficiency processes of comprehensive systems (organisations) management, which are used for

(setting and) achieving the goals of the system. In order to verify and implement the decision of the existence of the system (organization), and then do the fourth control function – control (management control), it is particularly necessary to verify the mutual relations between activities: 1. Preparations, 2. Analysis, 3. Synthesis and 4. Control of certain management parts, determined with their specific optimizations. Although it can be done in several ways, conceptual Tauzović's General Continuum (TGCc) (Tauzović, 2009) can also be used in modern management, whereby, for direct comparisons of relevant activities, practical TGCp of the internal management "raises" for two levels towards the theoretical TGCt in the external management, so that the organizing and controlling activities (as organizing and controlling /"final"/) management activities of individual parts) can be directly compared (in accordance with Figure 5). Although any comparison is of particular importance, the specific synthesis with internal preparations are emphasized here, namely:

(i) 1.2. Planning process of external management (PEI) is associated with 3. Production of internal management) (SI) and
(ii) 3. Design of external management facilities (SE) is associated with 1.2. Planning with improvement of internal management production (PII).

The implementation of decisions made, and then the design and production of the organization should strive to improve the production system business and thus the overall functioning of the organization, including its redesign. By doing this, the control, i.e. management control, as the process of monitoring and correcting the actions of the system by their managers not only to direct it towards determined, but also towards to the achieved goal, would be ended. If the goal of the system is not achieved, the overall management is repeated until it becomes achieved.

Conclusion

Modern management, based on the (modern) systems approach, requires more innovative and intelligent metodologies, whose applications would be a good basis for future more comprehensive practical and theoretical management developments. The need for further research (modern) management is particularly focused on the relations between managers and customers of system. Since customers have the increasing influence on systems management, managers should, as much as possible, adjust themselves to the consumers' needs, thus goal and general markets. Such adjustments should have managers' (employees') commitment and customers' (consumers') satisfaction as the consequence, which could be one of the bases of the future management success. Surely, the introduction of new (intelligent) technologies should lead to future management methodologies, which are predicted to continue being focused on ensuring of competitiveness based on quality. Since slavery to already known (determined) terms (terminology) implies slavery to its definitions, based on certain principles and theories, new terms (terminology) must be introduced, whenever it is necessary for the success of further (future) management research. In this paper, it was done for the external and internal management (which are commonly referred to as strategic and operational management) and therefore the importance of design and production of (improvement) system, based on its all-embracing management, is emphasised. Considering the (modern) operations, levels of future management system can be referred to as: 1. operations planning, 2. operations design, 3. operations negotiation and 4. operations performance.

All future research into (organizational) systems management based on: 1.2. quality, 2. globalization, 3. optimization and 4. virtuality of operations (Tauzović, 2009) should tend to 1.1. transcendent operations. By determining new types of operations, as new product production processes, the operations are classified into three groups so that, including new, they satisfy TGC again, in which 1.1. transcendental operations, as an external preparation, still remain. The analogous conclusion applies to the future management methodology.

Further (modern) management development, which has the management methodology called Tauzović's General Continuum (TGC) as its basis, should be based not only on experience, innovation and practitioners' intelligence, but also on intelligent knowledge of theorists determined on the basis of such experiences. Believing that this methodology is a possible basis for future management methodologies and that, being such, it will indicate the future path of development towards a "transcendent" methodology, the objective of publication of this paper is encouragement and the desirability to connect and unite as many modern management researchers as possible in this development, to make it possible to verify,

confirm, accept, use, improve and develop not only TGC, but also newer, more innovative and intelligent methodologies for future management. SM

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If a work is directly quoted from, then the author, year of publication and the page reference (preceded by "p.") must be included. The quotation is introduced with an introductory phrase including the author's last name followed by publication date in parentheses.

According to Mirković (2001), "The use of data warehouses may be limited, especially if they contain confidential data" (p. 201).

> Mirković (2001), found that "the use of data warehouses may be limited" (p. 201). What unexpected impact does this have on the range of availability?

If the author is not named in the introductory phrase, the author's last name, publication year, and the page number in parentheses must be placed at the end of the quotation, e.g.

> He stated, "The use of data warehouses may be limited," but he did not fully explain the possible impact (Mirković, 2001, p. 201).

➲ **Summary or paraphrase**

> According to Mirković (1991), limitations on the use of databases can be external and software-based, or temporary and even discretion-based. (p.201)

> Limitations on the use of databases can be external and software-based, or temporary and even discretion-based (Mirković, 1991, p. 201).

➲ **One author**

> Boškov (2005) compared the access range…
>
> In an early study of access range (Boškov, 2005), it was found...

➲ When there are **two authors**, both names are always cited:

> Another study (Mirković & Boškov, 2006) concluded that…

➲ If there are **three to five authors**, all authors must be cited the first time. For subsequent references, the first author's name will cited, followed by "et al.".

> (Jovanov, Boškov, Perić, Boškov, & Strakić, 2004).

In subsequent citations, only the first author's name is used, followed by "et al." in the introductory phrase or in parentheses:

> According to Jovanov et al. (2004), further occurences of the phenomenon tend to receive a much wider media coverage.
>
> Further occurences of the phenomenon tend to receive a much wider media coverage (Jovanov et al., 2004).

In "et al.", "et" is not followed by a full stop.

➲ **Six or more authors**

The first author's last name followed by "et al." is used in the introductory phrase or in parentheses:

> Yossarian et al. (2004) argued that…
>
> … not relevant (Yossarian et al., 2001).

➲ **Unknown author**

If the work does not have an author, the source is cited by its title in the introductory phrase, or the first 1-2 words are placed in the parentheses. Book and report titles must be italicized or underlined, while titles of articles and chapters are placed in quotation marks:

> A similar survey was conducted on a number of organizations employing database managers ("Limiting database access", 2005).

If work (such as a newspaper editorial) has no author, the first few words of the title are cited, followed by the year:

> ("The Objectives of Access Delegation," 2007)

Note: In the rare cases when the word "Anonymous" is used for the author, it is treated as the author's name (Anonymous, 2008). The name Anonymous must then be used as the author in the reference list.

➲ **Organization as an Author**

If the author is an organization or a government agency, the organization must be mentioned in the introductory phrase or in the parenthetical citation the first time the source is cited:

> According to the Statistical Office of the Republic of Serbia (1978), …

Also, the full name of corporate authors must be listed in the first reference, with an abbreviation in brackets. The abbreviated name will then be used for subsequent references:

> The overview is limited to towns with 10,000 inhabitants and up (Statistical Office of the Republic of Serbia [SORS], 1978).

> The list does not include schools that were listed as closed down in the previous statistical overview (SORS, 1978).

➲ When citing **more than one reference from the same author**:

> (Bezjak, 1999, 2002)

➲ When several **used works by the same author were published in the same year**, they must be cited adding a, b, c, and so on, to the publication date:

> (Griffith, 2002a, 2002b, 2004)

➲ **Two or more works in the same parentheses**

When two or more works are cited parenthetically, they must be cited in the same order as they appear in the reference list, separated by a semicolon.

> (Bezjak, 1999; Griffith, 2004)

➲ **Two or more works by the same author in the same year**

If two or more sources used in the submission were published by the same author in the same year, the entries in the reference list must be ordered using lower-case letters (a, b, c…) with the year. Lower-case letters will also be used with the year in the in-text citation as well:

> Survey results published in Theissen (2004a) show that…

➲ To **credit an author for discovering a work**, when you have not read the original:

Bergson's research (as cited in Mirković & Boškov, 2006)…

Here, Mirković & Boškov (2006) will appear in the reference list, while Bergson will not.

➲ When **citing more than one author**, the authors must be listed alphabetically:

(Britten, 2001; Sturlasson, 2002; Wasserwandt, 1997)

➲ When there is **no publication date**:

(Hessenberg, n.d.)

➲ **Page numbers must always be given for quotations**:

(Mirković & Boškov, 2006, p.12)

Mirković & Boškov (2006, p. 12) propose the approach by which "the initial viewpoint…

➲ **Referring to a specific part of a work**:

(Theissen, 2004a, chap. 3)

(Keaton, 1997, pp. 85-94)

➲ **Personal communications, including interviews, letters, memos, e-mails, and telephone conversations**, are cited as below. (These are *not* included in the reference list.)

(K. Ljubojević, personal communication, May 5, 2008).

FOOTNOTES AND ENDNOTES

A few footnotes may be necessary when elaborating on an issue raised in the text, adding something that is in indirect connection, or providing supplementary technical information. Footnotes and endnotes are numbered with superscript Arabic numerals at the end of the sentence, like this.[1] Endnotes begin on a separate page, after the end of the text. However, Strategic Management journal **does not recommend the use of footnotes or endnotes.**

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