”SOLUTIONS AND INTERVENTIONS FOR THE TECHNOLOGICAL TRANSFER AND THE INNOVATION OF THE AGRO-FOOD SECTOR IN SOUTH EAST REGIONS - TECH.FOOD PROJECT“

- Monograph -

Belgrade, November 2012

INSTITUTE OF AGRICULTURAL ECONOMICS BELGRADE

”SOLUTIONS AND INTERVENTIONS FOR THE TECHNOLOGICAL TRANSFER AND THE INNOVATION OF THE AGRO-FOOD SECTOR IN SOUTH EAST REGIONS - TECH.FOOD PROJECT“

Monograph

Editors:

Prof. dr Drago Cvijanović
Bojana Bekić, B.Sc.
Marko Jeločnik, M.A.

Reviewers:

Prof. dr Raluca Andreea ION
Prof. dr Zoran Njegovan
Prof. dr Savo Ivančević

Publisher:

Institute of Agricultural Economics (IAE) Belgrade
15 Volgina Street, 11060 Belgrade, Republic of Serbia,
Phone: +381 11 297 2858, Fax: +381 11 297 2848

Print:

Marketing Press, 58 Mis Irbijeva Street, 11050 Belgrade,
Republic of Serbia, Phone/Fax: +381 11 244 5476

Number of copies:

400

ISBN 978-86-6269-014-2

This Monograph has been funded with support from the European Union in the framework of the South - East Europe Transnational Cooperation Programme

FOREWORD

The monograph is the result of work within the second phase of the research study on the project under the title "*Solutions and interventions for the technological transfer and the innovation of the agro-food sector in South East regions - TECH.FOOD Project"*. The project was funded under the Program of Transnational Cooperation for South-East Europe, and included many research institutions, faculties, government agencies and enterprises from Serbia and abroad. Republic of Serbia was represented by the Institute of Agricultural Economics from Belgrade, while the foreign project partners came from six European countries: Hungary, Romania, Greece, Italy, Austria and Croatia. Within the project period 2009-2012 was established cooperation with many institutions and organizations whose common research issues were related to food-processing industry, with special accent on implementation of innovation in business activities and production processes of legal entities. The main project goals were primarily establishment of new contacts (networking), as well as better cooperation among all subjects that are on some way related to the agro-food sector. Direct participation of enterprises in the Project gave a special value to obtained research results, as through direct discussions with processing industry representatives were gained important information about functioning of mentioned sector of the economy. Interconnection of producers from countries within the region should contribute to the design of innovative technologies and capacities, as well as to improvement of existing production processes and final products in agro-food industry. Project considered organization of series of meetings in Serbia and abroad, that contributed as to the introduction of used production modes of processing industry in project partner countries, as to establishment of common business system. In Serbia, during the three years of project performing were organized four promotional events and six trainings, which brought together representatives of the processing industry, producers from agro-complex, scientific-research organizations, government agencies, media and consumer associations. Topics presented through events were characterized by attractiveness and actuality of current business conditions in Republic of Serbia: competitiveness of agricultural-food industry, road to establishing a brand, food safety in meat and meat-processing industry, products with a geographical indication of origin, production of autochthonous products, analytical and intervention tools for production improvement, marketing of food products, production standards and forms of producer's association. Implemented project activities in Serbia, attitudes of experts from the food industry (closely observed meat-processing industry), as well as detail work of the research team of the Institute of Agricultural Economics from Belgrade, was primarily influenced the creation of this monograph. Main goal of Publication is to inform all stakeholders about many elements of the situation that characterizes the livestock breeding and meat-processing industry in the Republic of Serbia, as well as with potential ways of improvement of aforementioned segment of agriculture that is from great importance for the national economy.

In Belgrade, November 2012

CONTENTS

INTRODUCTION

Project "*Solutions and interventions for the technological transfer and the innovation of the agro-food sector in South East regions - TECH.FOOD Project*" was funded under the Program of Transnational Cooperation for South - East Europe. Project was lasting within the period 25.11.2009-25.11.2012 and included number of research institutions, faculties, government agencies and representatives of enterprises. Project consortium was consisted of selected institutions from seven countries (six are EU member states): Hungary, Romania, Greece, Italy, Austria, Croatia and Serbia.

Realization of Project activities on the territory of the Republic of Serbia was conducted by research team of the Institute of Agricultural Economics (IAE) from Belgrade, with expert support of external associates from the sector of food-processing industry (meat and meat-processing industry).

List of participants on establishment of Monograph, within the II research phase on the Project TECH.FOOD:

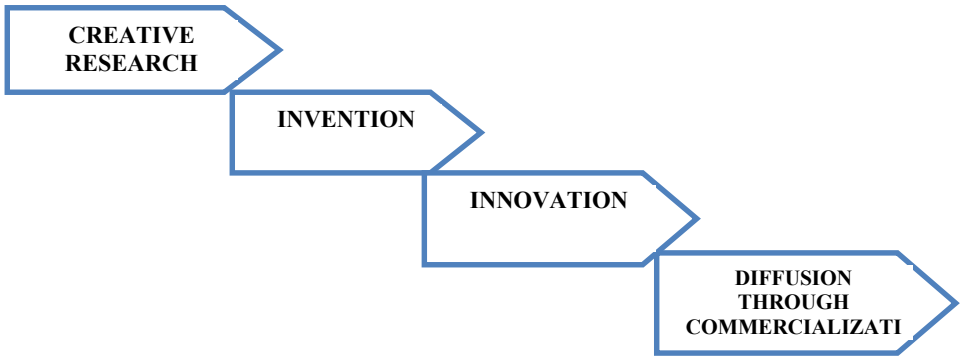
- Prof. dr Drago Cvijanović (took part in writing of II chapter),
- Doc. dr Jonel Subić (took part in writing of V chapter),
- Dr Branko Mihailović (took part in writing of II chapter),
- Dr Vesna Paraušić (took part in writing of I chapter),
- Mr Ljiljana Rajnović (took part in writing of IV chapter),
- Marko Jeločnik, M.A. (took part in writing of V chapter),
- Radojica Sarić M.A. (took part in writing of I chapter),
- Bojana Bekić, B.Sc. (took part in writing of III chapter),
- Marijana Jovanović, B.Sc. (took part in writing of III chapter),
- Biljana Grujić, B.Sc. (took part in writing of IV chapter).

I INNOVATIVE AND STRATEGIC CONCEPT OF RISK MANAGEMENT AND MODELS OF COOPERATION IN TERMS OF ENTERPRISES DEVELOPMENT IN MEAT PROCESSING INDUSTRY

1.1. Innovative approach to risk management in nowadays business environment

Innovation can be described as a process by which ideas are transformed into new products, services or processes to develop and improve competitiveness and business differentiation on the market. In other words, the innovation is the process of successful exploitation of new ideas and converting them into commercial success on the market. *Invention* is generating new ideas through creative culmination of research activities in the form of development of design, drawings and models, and it can be identified with discovery, invention and inventive talent. Therefore, it can be concluded that the invention comes before innovation and together they form the innovative process, which final stage is diffusion of innovations through a commercialization. Diffusion is the process of putting innovations into practical use for commercialization on the market. Generally, the innovation process contributes to development of innovative entrepreneurial spirit. Two basic characteristics of entrepreneurship are the innovation and a tendency to take risks. In terms of entrepreneurship, *invention* is the discovery of something unknown on the market, while the *innovation* is an introduction of that invention on the market, in order to create a competitive advantage. There are many types of innovations, ranging from primary, secondary, epochal, conservative, revolutionary, to a technological and a social one. The *innovative approach* includes research, organizational, personnel, financial, marketing, management and other activities, aimed at shaping new ideas to make them more suitable for the application in practice. Main stages of the innovative approach are: *creative exploration, invention, innovation and diffusion through commercialization* (*Picture 1*). The innovative approach is an initiator and driving force of socio-economic development of any country.

Picture 1. Innovative approach



Source: Author's graphical representation adapted to http://www.ctt.salford.ac.uk/our-process

The modern business environment at the macro and micro level is very dynamic, radical and turbulent, constantly pervaded by uncertainty and very destructive presence of risk that can lead to discontinuities in the business and reduce and limit the economic efficiency on the market. Accordingly, the *innovative approach* is of great importance for risk management in nowadays business environment, as it involves a proactive approach to business - "*nothing fails as quickly as success*". Risk management is general management function and a systematic process for identifying and assessing risks, through appropriate strategies, methods and techniques, in order to minimize the costs of loss and uncertainty. The main purpose of this activity is realization of strategic objectives in the most direct, most efficient and most effective way, through understanding the causes of the risk and its harmful consequences. The risk management is increasingly being used because there is no absolute certainty in today's business environment and to achieve greater security to reduce possible loss to the greatest extent.

Risk is inevitable burden for producers and the community as a whole. The risk can be defined as an unwanted change in the actual results of production, which is a negative deviation from the expected and desired results (e.g. *reduction of production or demand*). It is inseparable component of any economic activity that may threaten the stability, development and competitiveness of production. The presence of risk (e.g. *competition*) in the form of economically negative event (e.g. *reduction of market share*), contributes to the reduction of yield value of production, which represents the cost of risk that incorporates all *losses* (*reduction in sales and profits*) related to the realization of economically negative event. Maximizing the production yield value, in terms of the future net cash flow, requires a minimization of the cost of risk, in terms of optimal risk management, and one of the possible business strategies is, of course, *TECHNOLOGY TRANSFER WITH DIFFUSION OF INNOVATION. Technology transfer with diffusion of innovation is the transfer of knowledge and experience among different subjects, sectors and institutions, which includes expansion of technologically innovative solutions*. A new approach in the modern business environment, which is a kind of developmental discontinuity with the current view and states, can be defined as *INNOVATIVE ECONOMY*. *The innovative economy is a new model of reality, the driving force of development, which is based on knowledge, intellectual capital and creative resources such as innovation* (*Table 1*). Consequently, innovations are becoming an important factor of sustainable development of enterprises and economic development of the whole society, because they stimulate economic growth and contribute to the competitiveness of firms on the market. The risk management in today's business environment has a very important role in terms of competitive advantage on the market, i.e. the business success through:

1. Decrease of business risk,
2. Improvement of economic efficiency of business on the market.

Both aspects are *agents of investment activities as opportunities for innovation introduction in the production process and the program*. Otherwise, in order to recognize and build future market position, it is necessary to develop an adequate *MARKET - ORIENTED APPROACH* for managing risk through *STRATEGIC PLANNING*. *The strategic planning is a bridge between proactive thinking about the future and strategic action, which is limited to a certain time horizon, which pre-defines direction of development-innovative changes, and ways to implement them in today's business environment.*[1] Basically, the strategic framework determines innovative approach and it consists of two steps:

1. First minimize the weaknesses of the company, while increasing power, in order to take full advantage, with reduction of the environmental risks using SWOT ANALYSIS,
2. *INNOVATIVE budgeting* for continuous improvement of the production processes and programs.

Table 1. Change of developmental approach

Elements	Old	New
Organizational structure	*Hierarchy, bureaucracy*	*Networking, teamwork*
Organization of production	*Mass production*	*Flexible production*
A key driver of development	*Capital/labor*	*Innovation*
Technology of development	*Analog technology*	*Digital technology*
Source of comparative benefits	*Economy of scale*	*Knowledge economy*
Relationship with other business subjects	*Independent work*	*Clusters*
Labor force	*Specific skills*	*Different skills*
Ratio workers/leadership	*Antagonism*	*Co-operative*

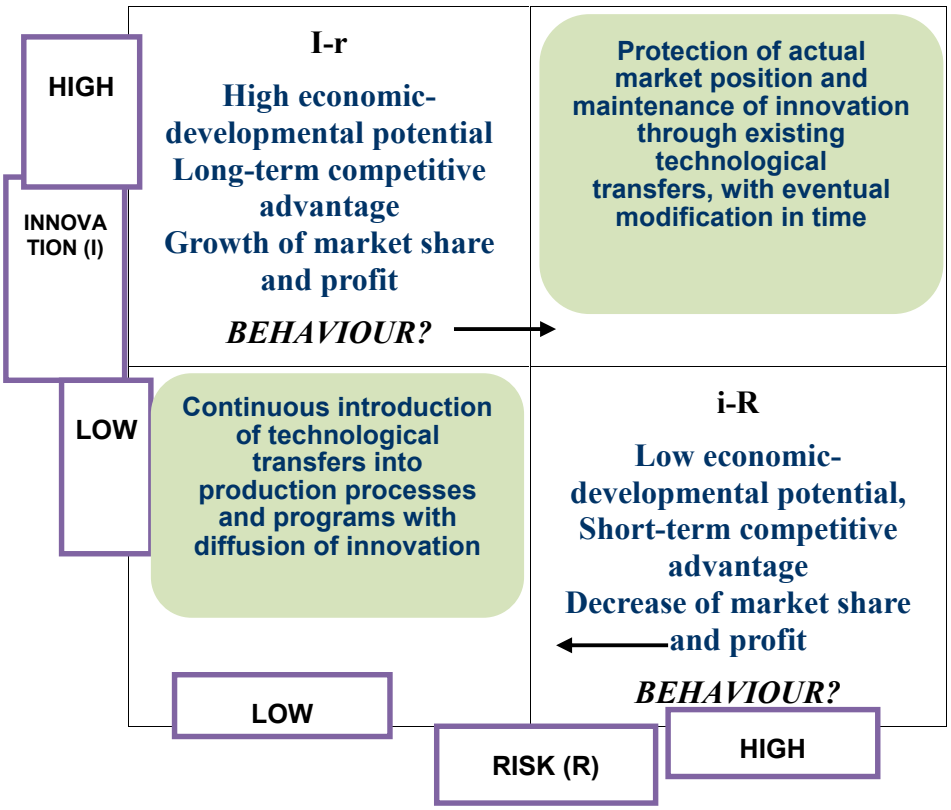
Source: Saric R. (2011): Risk management in the modern business environment - Innovative economy, III educative training presentation on the international project TECH. FOOD, International Press Centre Club (25.02.2011), Belgrade.

Only through strategic approach one can get an answer to the question: *HOW TO PERFORM ON THE MARKET*?, especially when it comes to the growing pressure of competition in today's business environment, which is very important market-production risk. For this purpose it is used a *STRATEGIC MATRIX,* which consists of four quadrants (*Picture 2*). In a long-term, it is more important to strategically manage risk in today's business environment, so that we „ARE DOING THE RIGHT THING“ (*effective business*), instead of profitable in short - term „TO DO THINGS THE RIGHT WAY“ (*efficient business*).

[1]Lindgren M., Bandhold H. (2003): *Scenario Planning: The link between future and strategy*, Palgrave Macmillan, New York, USA,pp. 14.

Also, the most critical factor in any strategic approach is the time, because you should not forget that „*time is money*"! Introducing innovation is in itself associated with uncertainty and can pose a risk, but also it may be the mean of the risk management, especially when it comes to the growing pressure of competition in nowadays business environment, so it is necessary to define an adequate market-oriented approach through the strategic planning.

Picture 2. The strategic matrix as part of an innovative approach to risk management in today's business environment



Source: Saric R. (2011): Risk management in the modern business environment - Innovative economy, III educative training presentation on the international project TECH. FOOD, International Press Centre Club (25.02.2011.), Belgrade.

In order to implement the innovative approach in practice, it is necessary to create research-development and innovative clusters, as unique combination of forces, to raise public awareness about importance of:

1. *Protection and development of intellectual property for socio-economic development,*
2. *Investing in education and scientific research.*

Fusion of activities of industry, small, medium and large enterprises, universities, faculties and research institutes, local and regional authorities, government

departments and agencies, is not a goal by itself, but a mean to achieve new profit, primarily competitive advantage in foreign markets. Accordingly, there are five basic tools to encourage innovative approaches:

- *Networking of cluster processes,*
- *Protection of intellectual property and research results,*
- *Promotion of education, training and different skills,*
- *Entrepreneurs' culture which will promote research results on the market,*
- *Access to financing the funds.*

1.2. Strategic framework as a determinant of innovative approach through the application of qualitative analytical instruments

Application of qualitative analytical tools in practice is inevitable, of great importance for business success on the market, and an integral part of the strategic framework, which is a determinant of innovative approach. The basic characteristics of qualitative analytical instruments are:

1. *Do not use mathematical-statistical methods and models, and they are based on case studies, situation analysis, content analysis and comparative analysis,*
2. *Applied at micro and/or macro level of development, and can help reduce risk in today's business environment.*

The main objectives to be achieved by defining the strategic framework, as a determinant of innovative approach, using qualitative analytical instruments in the meat processing sector, are:

1. *Raising awareness of companies on the innovative needs,*
2. *Improving knowledge on the innovative needs in order to optimize the applied research methodology,*
3. *Supporting strategic assessment of the company in terms of business conditions in the environment,*
4. *Promotion of innovative business processes within the company,*
5. *Providing useful information for top management in terms of making decisions about what research methodology is the best in achieving the strategic goals of the company.*

The effect of internal factors (*people, processes*) and external factors (*economic, technical, technological, socio - cultural, political, legal and regulatory*) of the business environment has a very important role in terms of achieving business success on the market. For the analysis of the business environment, using the *QUALITATIVE ANALYTICAL INSTRUMENTS,* such as *SWOT analysis*, in order to identify current and build future market position, and thus achieve a competitive advantage on the market and achieve business success. The analysis of the business environment is in the field of situational analysis. The situation analysis involves the analysis of internal environment (*identifying strengths and weaknesses*) and external

environment (*identifying opportunities and threats*). In other words, the situation analysis provides a diagnosis of the current situation, and future forecasts. This analytical approach contributes to minimizing the weaknesses of the company, while increasing power, in order to take full advantage while reducing the threats from the environment, which is the essence of the *SWOT analysis*. The expected results of this approach are reflected in:

1. *Optimal choice of innovative strategies and adoption of best methods for improving the given business process,*
2. *Continuous improvement of the given business process, by clearly defined methodological framework of analysis that includes the strategic planning,*
3. *Possibility to obtain ideas about how to compete on the market, in terms of defining the marketing strategy.*

SWOT is an acronym of four words: *Strengths*, *Weaknesses*, *Opportunities and Threats*. The SWOT analysis is a qualitative analytical tool, which is used in scientific - research work and it often determines the methodological framework of the analysis. This analysis can be used to analyze the business environment, such as *agricultural companies*, *meat processing or agro - food sectors*, and it represents the basis of strategic planning. In other words, the SWOT analysis is a qualitative assessment of the impact of internal and external factors on the business of a particular subject, i.e. it compares strengths - weaknesses and opportunities-threats in the environment (*Table 2*). Strengths and weaknesses tend to describe the current situation of development, while opportunities and threats tend to describe the immediate future development. This analysis is a basic management technique that is used in strategic planning and it enables identification of strategic goals, by assessment of internal and external conditions and the state of development that affect the achievement of the strategic orientation development.

Table 2. SWOT matrix

Analysis of internal environment	
Strengths	*Weaknesses*
Available financial and human resources Product quality Strong marketing promotion Good reputation with customers Confirmed lied position on market Accomplished competitive advantage and distinctive competence on the market The development of sales channels The ability to innovate products Successful management	Outdated technology and underdevelopment of R & D sector Lack of qualified staff Under-utilization of production capacity Decline in profitability Undeveloped distribution network Vaguely defined development strategy Weak market image Lack of management skills
Analysis of the external environment	
Possibilities	*Threats*
Expansion of product lines Expansion into new markets or segments Inclusion of new customers Complacency of competitors The emergence of new technologies Increasing of demand and expansion of customer needs	The slow market growth Increment of the competition intensity Unfavorable changes of exchange rates Change of needs and tastes of customers Laws and regulatory requirements that lead to increase of prices The entry of foreign competition

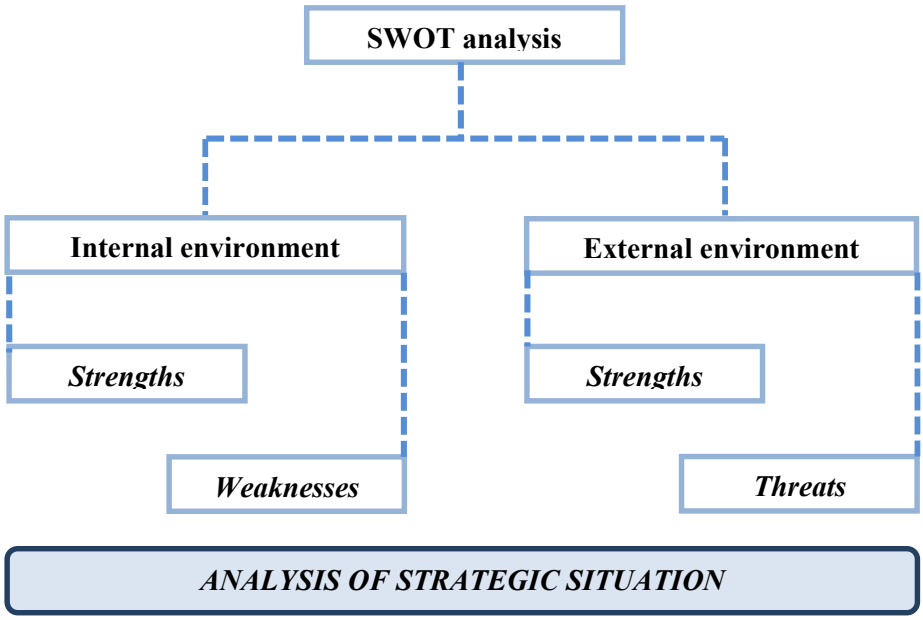
Source: Sarić R. (2010): Qualitative analytical instruments, II educational training presentation on the international project TECH. FOOD, International Press Centre Club (28.10.2010.), Belgrade.

Generally, strategic framework as determinant of innovative approach trough application of SWOT analysis is consisted of *5 steps*:

STEP 1:
Scanning the external and internal business environment by applying SWOT analysis as a qualitative analytical instrument

The SWOT analysis represents an important analytical tool for analysis of strategic situation from the aspect of developmental planning *(Picture 3).*

Picture 3. SWOT analysis



Source: Author's graphical representation.

The SWOT analysis starts with assessment of the current situation regarding external and internal business environment. The assessment of the current situation implicates an identification of internal and external factors, which impact the business. The internal factors include strengths, but also may include weaknesses of the business, while the external factors consider the possibilities and threats in the business. *In this step, it is necessary to identify all factors and rank them according to the importance in relation to business, for which the analysis is being made.*

STEP 2:
Internal and external analysis

In this step, internal and external factors, which impact business, are being analyzed. A main purpose of this step is finding whether *internal factor* is strength or weakness of the business, and whether *external factor* is possibility or threat to the business. Internal environmental factors are, for example: a *company culture, a company image, an organizational structure, a key staff, an access to natural resources, a position on the experience curve, an operational efficiency and capacity, brand awareness, market share, financial resources, exclusive contracts, patents etc.* The external environmental factors are, for example: *customers, competitors, market trends, suppliers, partners, political and regulatory environment, economic environment and measures, social changes, technological environment, etc.*

STEP 3:
Creation of SWOT matrix

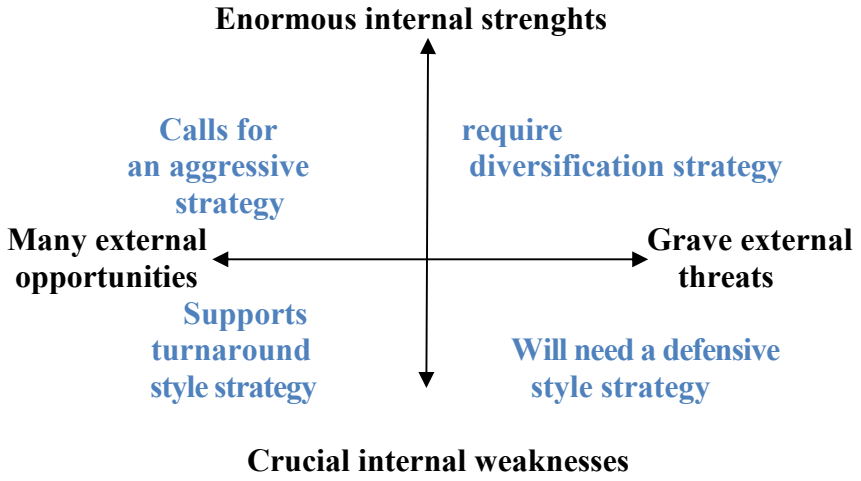
After the identification, by importance, of the external and the internal environmental factors, which impact business and classification of them at strengths, possibilities and threats, the next step is *creation of the SWOT matrix*. The SWOT matrix is consisted of 4 simple quadrants, which represent good and bad in business activities and also threats in the business.

STEP 4:
Defining the strategies

The main purpose of every analysis is giving the strategic plans and suitable style strategy styles (Picture 4). Generally, the SWOT matrix can give *4 strategies*:

1. **Strategy strenghts - possibilities**. *These strategies should take advantage of opportunities that fit the strenght of the business.* Examples of strategy types: *expand globally, increase sales staff, increase advertising, develop new products, diversify, etc.*
2. **Strategy weaknesses - possibilities**. *These strategies should enable it to overcome the weaknesses of the business while we utilize the possibilities*. Examples of strategy types: *joint venture*, *acquire competitor, expand nationally, backward vertical integration, forward vertical integration, etc.*
3. **Strategy strenghts - threats.** *These strategies should allow to use of strenght sides, while eliminate or reduce the threaths from the environment*. Examples of strategy types: *diversify, acquire competitor, liquidate, expand locally, business process re-engineer etc.*
4. **Strategy weaknesses - threaths**. *These strategies should allow the elimination of weaknesses of the business*. Examples of strategy types: *divest, increase promotion, retrench, restructure, downsize, etc.*

Picture 4. Comparison of strategy styles through their strengths, weaknesses, threats and possibilities

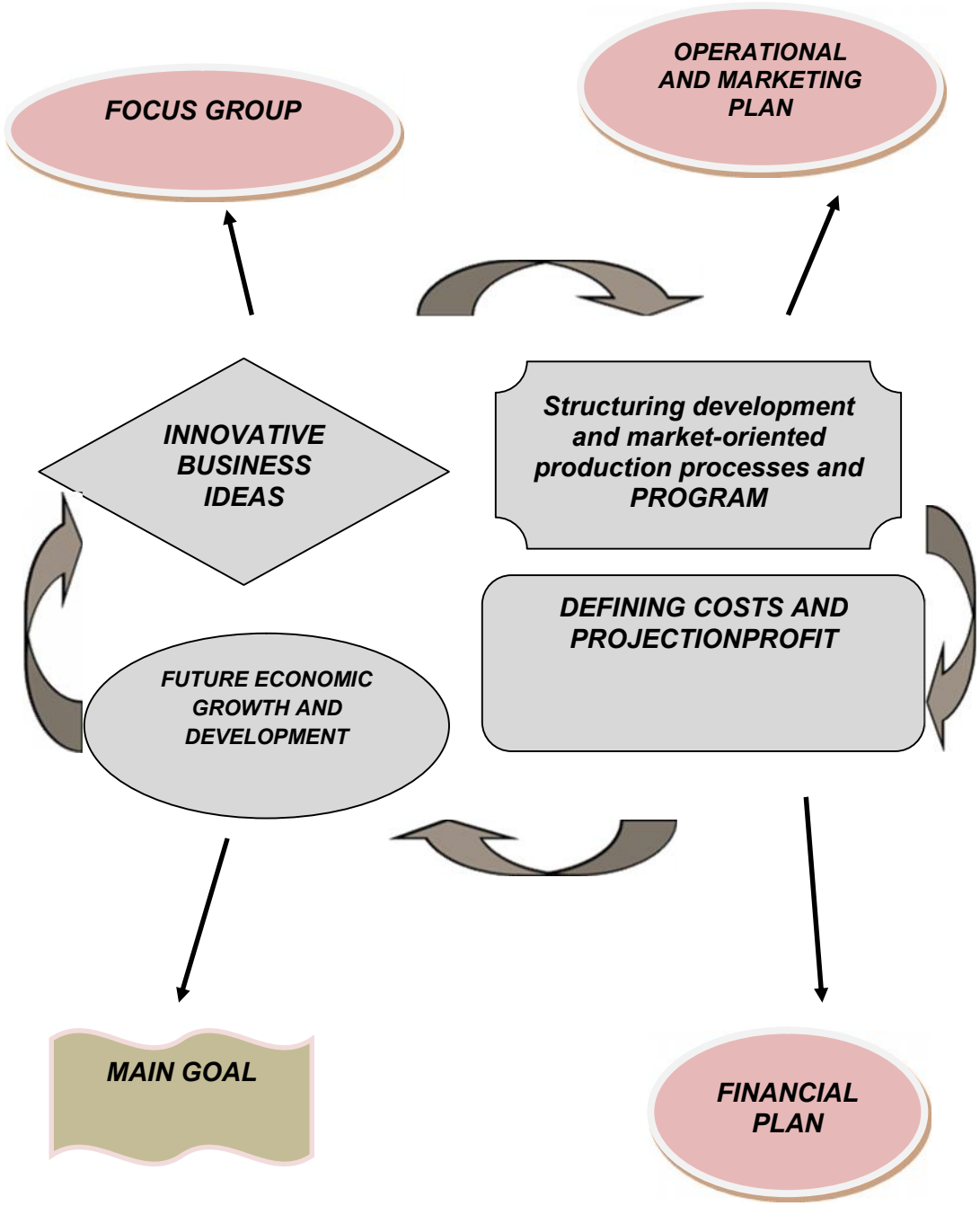


Source: Author's graphical representation.

STEP 5:
Innovative budgeting as a tool of intervention

Finally, one can define *strategic project plan* based on the SWOT analysis and the use of innovative budgeting for continuous improvement of the production program as very dynamic and complex process (*Picture 5*).

Picture 5. Innovative budgeting as a tool of intervention



Source: Author's graphical representation.

1.3. Models of market subjects association in agriculture of the Republic of Serbia

Fragmentation of agricultural husbandries, their small commercial and market strenght, low productivity of agricultural production, sales problems and inefficient market of agro-food products, as well as uncompetitive and unrecognizable export of agro-food products from Serbia - those are just some of the reasons that initiated the need for consideration of business associations, to eliminate or at least mitigate limitations of agricultural development. In terms of increased trade liberalization (within the SAA and WTO), globalization of markets and the dominance of multinational companies, associations are seen as an important instrument for achieving economy of scale, increase of productivity and innovation, and growth of competitiveness.

In this section, we will discuss about different forms of association of agricultural producers and SMEs in the area of agribusiness: farmers' associations, cooperatives, clusters. Each of the presented forms of association has its own specific characteristics, which are all different, and each form may be appropriate at a given time or for a particular type of situation/problem. Overall, in the Republic of Serbia all forms of business associations are insufficiently developed and they are not used as a precondition for growth of competitiveness. In the following text, we will give some of the main characteristics of possible association models of market subjects.

1.3.1. Associations of farmers

Associations of farmers are becoming increasingly common and indicate „the birth“ of knowledge that farmers can achieve their common goals faster and more efficiently. These associations have *advisory, educational and lobbying role* and represent the first link of small agricultural producers with all relevant institutions and organizations in the region: the Ministry of Agriculture of the Republic of Serbia, scientific institutes, teams of local economic development, various national and international development agencies, non-governmental agencies and centres, donor funds etc. Through easier access to sources of financing, through procurement of cheaper inputs for agricultural production or sale of agricultural products - associations contribute to *economic prosperity* of its members.

Legal basis for establishment of associations and their work.[2] Legal basis for establishment of association is the Law on Associations („Official Gazette of Republic of Serbia”, number 51/09), passed in 2009. According to this law, the association is a voluntary and non-profit organization based on freedom of

[2] Guideline for application of the Law on Associations, the Ministry of Government Administration and Local Self - Government, Civil initiatives, Embassy of Great Britain in Belgrade, OEBS Mission in Serbia, October 2009, p. 20

association of more physical or legal persons, established for achieving and improving a common or general goals and interests. The Association may be established by a minimum of three founders, provided that at least one of the founders must have residence/headquarter in the territory of the Republic of Serbia.

The main benefits that farmers can realize through these associations are:

- Possibility to use funding for projects from state funds (local government budget, the budget of the Republic), donor funds, funds of various national and international development agencies,
- Acquisition of cheaper raw materials and the payment conveniences, as well as easier and more secure sale, through integration of supply and joint activities in the field of marketing,
- Links between members in the exchange of knowledge, experiences and material for livestock breeding, etc.,
- Reducing the cost of obtaining various certificates: for organic production, the introduction of standards, registration of products with geographical indications etc.,
- Market recognition through branding (logo) of Association, participation in trade fairs in the country and abroad etc.,
- Education and training of farmers, through organizing of lectures, demonstration experiments, travels, etc.,
- Easier legal protection of members of the association, meeting farmers with measures and regulations of the relevant ministry, etc.

Despite the obvious advantages of association, in Serbia it is not sufficiently developed, and often the only activity of the association is organizing lectures, winter schools, promoting the production assortment of suppliers of herbicides, fertilizers, etc.

Main characteristics of associations in rural areas of the Republic of Serbia are[3]:

- Large number of associations of farmers is characterized by passive membership (lack of entrepreneurship and farmers' initiative for common investing and realization of common projects), problems with financing of activities, lack of necessary equipment for work and sale (silos, dryers, storage facilities etc.),
- Small number of associations has implemented specific projects that contribute to addressing the crucial needs/problems of the rural population: (1) the problem of sale of agricultural products, and (2) the problem of low financial and production capacities. Instead of an emphasis on solving these problems, most associations and NGOs in rural development are active in programs, such as the promotion of cultural and historical heritage, education/ extension, etc.

[3] Paraušić Vesna, Hamović Vladana, Arsenijević Željko (2008): "Udruženja poljoprivrednika u funkciji konkurentnosti domaće poljoprivrede". International Scientific Meeting: "Multifunctional Agriculture and Rural Development III - rural development and (un)limited resources", 4 - 5th December 2008, Faculty of Agriculture in Zemun - Belgrade, Book I, pp. 491 - 497.

The success of the association in agriculture will depend greatly on the creation of favorable business environment for the business activities in the agricultural sector, and the possibility of cooperation of agricultural producers with similar attitudes and similar economic strenght, which along with highly expressed mutual trust and understanding, and through the establishment of stock companies or cooperatives, invest in building of capacities for processing and provision of equipment for work (construction of silos for storing of grains, construction of storage spaces, purchase of machinery, etc.).

1.3.2. Agricultural cooperatives

Agricultural cooperatives are established and operating under the Law on Cooperatives from 1996, according to which the agricultural cooperative can be established by at least ten farmers and other private persons, which own or on other basis use land, buildings and machinery in agriculture (Article 9)[4].

Under this law, a cooperative is a legal entity and form of organization of physical persons (co-operators) in which they operate on the cooperative principles to achieve their economic, social and cultural interests (Article 1). Unlike enterprises (companies) that have clearly defined ownership and basic goal - to make more profit, the key role of cooperatives should be the provision of services (assistance) to all members of the cooperative in achieving economic prosperity. That is why every member of the cooperative is equally valuable and they all have the same right to vote, while in companies voting right is related to proportional participation in ownership (capital of the company). The cooperative achieves its function through the following means:

- Maximizing the income from the sale of agricultural products and reduction of purchasing costs of inputs,
- Development of adequate facilities for the storage, purchasing, processing, handling, packaging and sale of finished products on the market (cold storages, driers, packaging centres),
- Providing various services to members (mechanization services, experts' advice, assistance in product standardization, participation in trade fairs),
- Provision of market and technological information, which are necessary for farmers in planning and directing of future production,
- Starting of initiatives and preparation of development programs that will solve infrastructure problems of villages and develop the rural market.

[4] The Law on Cooperatives was adopted in 1996 (Official Journal of FRY 41/96), it was slightly changed in 1998 (Official Journal 12/98), and in 2006 was done the law alteration, which referred on adding the clause 49a (Law on Cooperatives Law Supplement, Official Gazette RS 34/06:39).

Today, agricultural cooperatives in Serbia have the following main features[5]:

- Many cooperatives do not respect principles of the cooperative,
- Most cooperatives are financially weakened and impoverished (without land and basic facilities: dryers, refrigerators, silos, storage facilities, facilities for processing and packaging),
- Cooperatives are faced with a number of organizational/status and property/legal issues,
- Full market marginalization of cooperatives due they operate without any interest connection among them.

National Rural Development Programme of Serbia 2011-2013 divides cooperatives on[6]:

- „old" agricultural cooperatives (in which employees, rather than cooperative members, run the cooperative),
- „directorships or private" cooperatives,
- „donors" cooperatives,
- There are few „true" cooperatives, which were created thanks to initiatives by farmers and in which cooperative principles are being respected.

There are many reasons for this state of agricultural cooperatives, starting from the unsuccessful privatization, underdeveloped competition on the market of agro - food products, high investment risk and costly loans to a lack of appropriate legislation and political will to improve the situation regarding cooperatives.

The consequences of this situation are cooperatives inadequate to the needs of sustainable rural development and which farmers do not recognize as their own associations. Also, the satellite accounts of the cooperative sector in Serbia (the data of the Statistical Office of the Republic of Serbia) indicate a small contribution of the cooperative sector to the creation of gross domestic product. Specifically, these data indicate that the contribution of the cooperative sector in overall economic activity is only 0.18% (2009), and the share of gross value added of cooperatives, in the agricultural sector, was only 1.5% in gross value added of the agricultural sector in Serbia in 2009.[7]

Affirmation of agricultural cooperatives in Serbia involves several steps, of which the first and the most important is - adoption of new law on cooperatives, which should resolve the issue of assets ownership of, so called, old cooperatives, and issue regarding management of cooperatives, statutory changes, revisions etc. Solving these problems would create the conditions for new steps on the path of revitalization of

[5] Paraušić Vesna, Hamović Vladana, Cvijanović Drago (2010): „Analiza stanja i mogući pravci razvoja zemljoradničkih zadruga na području grada Beograda". Tematski zbornik „Agrarna i ruralna politika u Srbiji: Održivost agroprivrede, zadrugarstva i ruralnih područja (3)", izdavač Društvo agrarnih ekonomista Srbije, Poljoprivredni fakultet, Zemun, Editori: Danilo Tomić, Miladin Ševarlić, strana 169 - 180.

[6] National program of rural development of the RS, 2011-2013, Official Gazette no. 15/2011, pp.13-14

[7] Satellite accounts of Serbian cooperative sector in the period 2007 - 2009", Serbian Statistical Office (http://webrzs.stat.gov.rs/WebSite/userFiles/file/Nacionalni/Satelitski_racuni.pdf, p. 32).

cooperatives, such as:

- Association of cooperatives (which today have little bargaining power in relation to manufacturing industry),
- Development of specialized cooperatives (for improvement of production and sale of milk, meat, fruit etc.).

1.3.3. Clusters

Small enterprises and small producers in transition economies cannot compete, on any ground, with associated and global companies in the world. Because of the small production capacity and offer potential, as well as due to non-standardized production - they cannot enter the world fairs or large markets such as the EU, Russia, Iran and the Middle East. Practice shows that only financially strong, large companies can have the competitive export and that they can explore the market, implement innovative marketing, new technologies and production standards. To achieve higher level of business performance of SMEs, solution lies in clusters, which provide a number of benefits to enterprises, increase productivity of involved members and increase their innovative capacity.

Definition of clusters. A cluster is a group of interconnected companies and respective institutions located in the geographical proximity, dealing with a particular activity, and linked by common characteristics and complementary[8]. Clusters are not unique, they are fairly typical and that is the paradox: strong competitive advantage in global economy lies mainly in local things - knowledge, relationships, motivation - differences that competitors cannot easily copy and which can be best developed through clusters[9]. Ministry of Economy and Regional Development of the Republic of Serbia, which is responsible for the development of clusters, defined clusters as a form of business association of geographically concentrated companies with institutions that support them in the specific area in which they compete, but also cooperate[10].

Cluster cooperation is characterized by closeness of involved members (geographic, but also cultural and institutional compliance), collaboration and connection of members (through cooperation, but also competitive relationship), their geographical or local boundaries, active channels for business transactions and communication, access to international scene, creation of common products and/or services or common solving of some specific needs or purposes.

[8] Porter E. Michael (2008): „O konkurenciji“, FEFA, Beograd, str. 202.
[9] Michael Porter (1998): Clusters and the New Economics of Competition, Harvard Business Review; p. 78.
[10] Instruction for conducting the supporting measures to innovative clusters development in 2011, the Ministry of Economy and Regional Development of the RS.

Impact of clusters on the competitiveness′ growth. The clusters contribute to increased competitiveness of involved members in three ways[11]:

- through increase of productivity of companies involved in the cluster,
- through management and direction of innovation, that encourage future productivity growth,
- through encouraging of new activities that extend and reinforce the cluster itself.

In the Republic of Serbia, there is no single database or registry that deals with the clusters. The clusters are not followed by the Statistical Office of Republic of Serbia and the Ministry of Economy and Regional Development of the Republic of Serbia has no complete database of all clusters in Serbia. The largest number of clusters in the Republic of Serbia is registered as associations in the Serbian Business Registers Agency (SBRA), according to the Law on Association from 2009. At the same time, there are also a small number of clusters, registered as stock companies of non-profit character or foundations, as well as clusters without legal registration, and in practice they partly apply the concept of cluster networking (examples are association of raspberry producers in Arilje and cold storage association in Arilje).

Generally, clusters in the Republic of Serbia are underdeveloped and largely resemble the associations, and clusters in the production of meat products do not yet exist, more accurate, they are not registered. Basic characteristics of the clusters in the field of agriculture and rural development are the following[12]:

- The formation of clusters is at the very beginning (the largest number of clusters is in the initial period of operation) and a small number of clusters is operational,
- There is a low level of trust and underdeveloped collaboration of cluster members with suppliers, firms in related industries, government bodies, local authorities, scientific and educational institutions etc.,
- Clusters do not have a critical mass of participants (or critical mass of capital and resources) and have extremely low market, export and innovation capacity,
- Clusters are not known at domestic and international markets and still do not show contribution to the growth of productivity, innovation and competitiveness of the involved members.

Main reasons of underdeveloped clusters have external nature (adverse macroeconomic, microeconomic and especially business environment), but the reasons are also in the nature of SMEs i.e. their small internal strength and capacity, and insufficient joint activities.

[11] Michael Porter (1998): Clusters and the New Economics of Competition, Harvard Business Review, p. 80.

[12] Paraušić Vesna, Drago Cvijanović, Vladana Hamović (2010): „Klasterski pristup unapređenju konkurentnosti stočarske proizvodnje u Republici Srbiji“, strana 61 - 73, Zbornik Matice Srpske za društvene nauke, broj 130.

In the future, there is no doubt that there will be a great need to provide adequate support to development of clusters. In the support of clusters, a financial support of government institutions will not be crucial, but the activities of the state in elimination of the limits of development and growth of SMEs, which are located in the macroeconomic and microeconomic policies/business environment. Crucial will be the role of the state in creating of stimulating business environment for SMEs, which includes:

- Supportive investment and tax policy,
- Innovation Incentive Policy,
- Developed financial market, with favourable external sources of funding and provision of loan,
- Developed policy of competition protection on the market (regulation of monopoly issues, companies with dominant position on the market and so on.),
- Developed business infrastructure (business incubators, science and technological parks),
- Developed physical infrastructure.

In addition, the success of the cluster will depend on:

- Entrepreneurial initiatives of businesses (agricultural producers) in the direction of larger association, networking, building of confidence and organizing of joint activities,
- Support to clusters from the institutions of support/cooperation (Business Support Organisations or Business Service Providers), which help businesses in the cluster to increase their competitiveness on the national and the international markets (through technical, consulting, financial and other support). In Republic of Serbia these institutions are recognized as regional developmental agencies/centres for the development of SMEs, which have the capacity to attract budgetary resources of the Republic of Serbia and the EU funds.

1.4. Case study: presentation of different forms of association in agriculture of the Republic of Serbia

I Association of farmers "Moba", Ljig.[13] This association, which name means the common good deed, the power of working together, was founded in 2002 and, thanks to so far activities, it had already gained the trust of many farmers and became the backbone of the best ones. The association brings together farmers from the area of Ljig and other parts of Serbia, agricultural experts, scientists and entrepreneurs who are engaged together in the process of „business" recovery and development of Serbian villages and agriculture. The Association strives to be the bridge between science and producers, and agricultural extension of the association provides free services to farmers on the field.

[13] http://www.moba.co.rs/udruzenja/upmoba.htm.

The main objectives of the association which have success are:

- Introducing farmers with measures and regulations of the Ministry of Agriculture, Trade, Forestry and Water Management of the Republic of Serbia (MATFWM of RS),
- Education and training of farmers in the sphere of production (organization of scientific meetings, conferences, seminars, free services of agronomists),
- The provision of professional services in the field of investments, especially to help in applying for grants and loans from the program of MATFWM of RS but also from other funds, particularly EU funds,
- Encouraging association by districts (each year Moba's activities go beyond local boundaries, which promotes the idea of association and networking),
- Use of Internet in agriculture, etc.

Association „Moba" implemented numerous projects which strengthen capacities of rural areas in Serbia. Some of the projects, which was supported by the MATFWM of RS was:

- campaign for control of soil fertility and liming,
- Project „Rural schools - small centers for the preservation of old varieties of apples",
- „Center for Rural Development Ljig Moba", which is one of the regional centers of Republic of Serbia for support of rural development.

II Agricultural cooperative "Kulen", Bački Petrovac.[14] According to the census results from 2011, Bački Petrovac has the population of 6,063 and it belongs to the South Bačka District. It is famous for its numerous husbandries engaged in handicraft production of kulen. Petrovački kulen is a dish of traditional Slovak folk cuisine that is based on tradition (Slovak secret of making a delicacy goes two and a half centuries back), authentic geographical origin and mandatory and specific family recipe for production. The cooperative of producers of Petrovački kulen (Petrovská klobása) from Bački Petrovac was founded in 2005. Members of the cooperative are small registered agricultural husbandries (for production of paprika, pigs), and also households with no land, and engaged in handicraft production of kulen. Kulen, produced by the members of the cooperative, has specific and recognizable taste, aroma, colour and appearance. It produces without additives, preservatives and synthetic additives (basic ingredients are ripe pork, homemade pepper, salt and spices), in old family way in improvised facilities of the members of the cooperative. Currently, kulen is produced in small and limited quantities, since there are still no adequate bylaws governing this production. In general, increase in production of autochthonous meat products (kulen, sujuc, prosciutto) on agricultural husbandries and association of these manufacturers, is significantly limited by the absence of a bylaw, which provides veterinary-sanitary requirements to be met by a small family facilities for production of these products. Lack of legal regulation prevents the registration of small - scale producers and legal presence of autochthonous meat products on the market.

[14] http://www.kulen-backi-petrovac.ls.rs/rs.

To increase the production and sale of kulen, the members of the cooperative have begun a construction of larger facility/installation for organized and controlled production, which would meet the required standards, sanitary and technical-technological conditions for production, and in which manufacturers would produce, dry and store kulen in the traditional way (respecting quality standards). AC „Kulen“ cooperates with research and educational institutions, with which support „Petrovačka sausage” is registered in the Intellectual Property Office in Belgrade, as the registered product with geographical indications (registration was carried out during 2007). Protection of origin means that all members of the cooperative must comply with the prescribed standards of production, starting from varieties of pigs, breeding methods and the time of slaughter, through kulen preparing recipes, method of storage, control and sale criteria.

III Association of producers and exporters of baby beef “Cluster Baby Beef”, Belgrade. The initiative for association was launched in 2006 by representatives of the producers of beef cattle and slaughter facilities registered to export beef to the EU. The members were originally in association of slaughterers and exporters, which, at the meetings of the Chamber of Commerce Belgrade, tend to put attention of the competent authorities on numerous problems in livestock production and large (unused) opportunities, primarily regarding favourable natural conditions, knowledge, experience and tradition of Serbia in this sector. As a cluster, the association was registered in 2009 (with adoption of the new Law on Associations), by 12 founders, with the aim of reviving livestock production and increasing the export of beef. The cluster members are the companies that are fattening cattle and/or export cattle, slaughter/processing companies, companies that deal with livestock registration, companies that deal with fodder production and institutes in the field of livestock and meat technology. Through this form of joint appearances, the members expect to be able to reduce costs of production and exports, to implement less expensive standards and brands, and in particular, with the support of science, to meet the stringent requirements of export markets, when it comes to sale of beef (breeding material, specific diet, weight of cattle, meat colour, safety and health standards, etc.). The cluster members plan to direct their activities towards: proposals of system measures of the Ministry of Agriculture in the area of long-term development of cattle production, process of standardization and certification of products „Beef - Baby Beef Serbia“, foreign market research and export requirements, promotion of joint participation on foreign markets, strengthening marketing activities with foreign distributors and consumers of baby beef etc. The cluster still has no significant activity or financial, logistical and technical support from the institutions in the field of agriculture, regional and rural development (MATFWM of the Republic of Serbia, SIEPA, regional developmental agencies etc.). Discouraging agricultural policy measures (in particular, the lack of incentives for breeding and export of cattle), lack of favourable sources of financing the production and export, the lack of support for cluster networking, high level of investment and market risk in the country and in the sector to which the cluster belongs - significantly limit all future activities of this cluster.

II MARKETING AS A FACTOR OF ENTERPRISES DEVELOPMENT IN THE SECTOR OF MEAT INDUSTRY AND DEVELOPMENT OF MANAGERIAL SKILLS USING CONSULTING AS A MODEL

2.1. Marketing activities of companies at domestic market

It is evident that, in the meat processing industry, there is excess capacity considering that it was designed for the market of the former Yugoslavia. A structure of the meat processing industry in Serbia is uneven in terms of technical equipment and knowledge of marketing logic. On one side, there are companies that have a high technical equipment and appropriate qualification structure, while on the other side there are companies that have stagnated regarding new technology and marketing trends. Characteristics of meat products and characteristics of supply and demand that affect program marketing activities of these specific products are significant.

Four components of marketing mix are often used for defining the marketing program, and they are:

- Product,
- Price,
- Distribution,
- Promotion.

The decision of the marketing mix must be made for distribution channels and final users. Marketing program should provide guidance to the real and anticipated needs of the economy and society, and effective selling of products on the market.

I Product - The first element of the marketing concept - 4P applies to the product. It is necessary to know the characteristics of the products, especially the ones that make it specific to other products, because promotion of the product should be based on them, i.e. its competitive advantage. Differentiation opportunities exist in the form of several important aspects of the product, including: packaging, labeling, quality and brand.

Modern packing is much more than wrap of the product or cardboard box for its transportation. In international marketing problems regarding packaging are associated with: mastering the larger geographical distances, overcoming many cultural differences, and dealing with various environmental standards in the world.[15] The materials used inside the package must be new, clean and of such quality to prevent external or internal damage to the product. We should mention several common components of packaging:[16]

[15] Rakita, B. (2001): Međunarodni marketing, Ekonomski fakultet, Beograd, Srbija, str. 352.
[16] Presna, M.,B., Branković, A., Savčić, R. (2006): Sveže voće i povrće 2006: Konkurentnost privrede Srbije, Jefferson institut, Beograd, Srbija, str. 30.

- Customers require packaging that is not harmful to health, that is recycled; it is becoming more important issue in the world, because buyers are most concerned about protecting the environment,
- Variability is another feature of packaging in the world because there are no standards of packaging and there are a number of different packages, which are different for small and large customers,
- Because of retail selling it is increasingly present packaging printed in different colors with the visible logo to attract consumers and connect them to a local brand of the producer,
- Modern packaging should be designed specifically for each type of product in order to reduce losses but, at the same time, adapting to the needs and demands,
- Packaging should be practical, with very little free space, while also protecting against mechanical shock during transportation.

Labeling is an important feature of packaging (trademarks, declarations of origin and quality) that significantly contributes to product differentiation in meat processing industry. On the other hand, the quality of the product is a necessary condition for achieving business success on the market. Quality assurance and compliance with quality standards ISO 9000 - 2000 families, ISO 14000, TQM, etc. is one of the most important strategic elements of competitiveness on the international market. At the same time, brand name identify the supplier or manufacturer, gives him more freedom and power in the formation of prices, it is a sort of guarantee of quality and the seller's promise to consistently serve customers specific set of features, benefits and services.

II Price - The next element of the marketing program is the price, which is an indicator of investment profitability in meat processing industry and also shows the cost efficiency of the company. It is one of the marketing mix instruments, which, used alone or in combination with other instruments, should enable the realization of business objectives. Price is a strategic and tactical variable which affects both the achievement of sales volume and profit in the short term, and in the growth and development of the company in the long run. The goal of marketing is not the highest possible price for products and services, but the price which will contribute, in combination with other marketing mix instruments, to short- and long-term goals of business. When deciding about the prices, it is necessary to take into account the effects of the factors of different nature and intensity of the effects, of which a good number is out of companies' control. In most cases, the factors that affect are complex and dynamic. Number of factors that affect the pricing policy is theoretically unlimited. However, costs, demand, competition, economic policy and government price controls are the main determinants whose analysis cannot be passed when deciding on prices.

III Distribution - Distribution as activity involves all those activities that are essential to the delivery of products from the manufacturer to the consumer or user of the product. Distribution channels are the marketing mix instrument that is used as a vehicle to get in touch with customers. In making decisions about the sales channel is taken into account the existing policy of products, prices and promotions, but also any decision on the selection of channels affect later decisions about the product, price and promotion. Consequently, decisions on individual instruments of marketing mix must be coordinated. The purpose of sales channels is to enable the goods from the manufacturer to the customer comes on time and in shape for use. They make a bridge between manufacturers and customers. Mediators - members of sales channels - do not necessarily have to be the owners of the goods; hence the legal aspect (property) is not their essential characteristics, but the functions they perform in the economy. Distribution channels must provide the range of products and services that customers are looking for and to provide them at the price they are willing to pay. Successful marketing assumes logistics that fits perfect in the chain from manufacturer to customer. Companies are expected to:

- Identify and define the geographic areas and identify potential customers,
- Assess the level of unmet demand among customers within a defined market area,
- Consider competition in the market (knowledge of current and potential competitors, where are they located and what services are provided).

IV Promotion - Promotion is the only instrument with communicative character and the most elastic instrument, which is linked directly to the creation of the name and reputation on the market. The role of promotion is in informing potential customers, developing and encouraging tendency to action, i.e. purchasing the products. It includes: personal selling, sales promotion, public relations, industrial advertising, direct marketing and promotion of national exports. Promotion at international level has an additional form, which could be characterized as promotion of national identity and national export promotion. Marketing program should include an interactive system of marketing that uses one or more advertising media in order to influence the market demand. In fact, it is a *direct marketing*, which is an effort to attract and maintain buyers based on contacts without intermediaries.

The goal is to achieve a direct response in the form: 1. purchases by phone or mail, 2. requests for catalogs and product literature, 3. consent to visit the location, event, fair or exhibition, 4. participation in some form of action, 5. requirements for a product demonstration, requests for a visit to company. Favorable market positioning can be achieved through appropriate *public relations*. The actions of public relations aimed at creating a public opinion about the product and its characteristics. To have a positive effect on public opinion, messages must be consistent with the existing value system in a society or in a certain part of the public whom the message is addressed to. Audience, who are interested in public relations, are not just existing and potential customers, but also employees, subcontractors, suppliers, and society at large.

2.2. Development of international marketing strategy

Total trade of Serbian agriculture with the world in the period January - December 2011 amounted $3,732.9 million, of which $2,696.6 million is related to export and $1,382.1 million is related to import. In this period, agriculture's surplus in trade with the world was $1,314.5 million, which is 9.1% more than in the previous year. Compared to the same period in 2010, agricultural export was higher by 20.3%, while the import increased for 33.4%. The coverage of import by export in Serbian agriculture was 195.1%, while in the same period last year it was 216.2%.

The best results, i.e. the largest trade surplus with the world has been made with grains $648.8 million, followed by fruits and vegetables $356.6 million and animal and vegetable oils and fats $155.9 million.[17] In calendar 2011 was exported about 240,000 t of wheat, 146,000 t of flour and 38,000 t of wheat seed. At the same time was exported 1,595,000 t of maize, 192,600 t of sugar and 116,000 t of fresh apples *(Table 3)*.

Table 3. The most important export and import products in 2011

Export	In t	In million $	Import	In t	In million $
Maize, yellow	1,594,692	423.8	Coffee, raw	32,466	102.5
Sugar, white	192,599	159.9	Cigarettes	5,851	62.8
Raspberry, Roland	33,561	101.2	Bananas, fresh	53,010	38.4
Wheat	239,268	73.3	Food products, unmentioned	9,569	37.9
Sunflower oil	41,900	66.7	Oranges, fresh	48,291	28.7
Apple, fresh	115,725	62.2	Tomato, fresh	25,094	18.5
Beer	80,965	59.6	Tobacco, dried	2,907	17.9
Non-alcoholic beverages	103,603	56.9	Products based on coffee	3,896	16.2
Sour cherry, Roland	26,050	54.5	Palm oil	11,631	15.4
Soya oil	40,286	52.8	Other agro-food products	787	15.1

Source: Statistical Office of the Republic of Serbia, http://webrzs.stat.gov.rs/axd/index.php

Analyzed by groups of countries, the largest export of agricultural products was carried out in 27 EU countries in value of $1.3 billion, then in the CEFTA region of $1.2 billion and the rest in other countries *(Table 4)*. Also, the highest import was from the EU, in value of $757 million, followed by other countries $757 million and the rest of the $530 million from the CEFTA countries.[18]

[17] Agriculture in 2011 with predictions for 2012 - assessment, evaluation and proposals, Serbian Chamber of Commerce, Association of Agriculture, Food and Tobacco Industry and Water Management, Belgrade, February, 2012

[18] Agriculture in 2011 with predictions for 2012 - assessment, evaluation and proposals, Serbian Chamber of Commerce, Association of Agriculture, Food and Tobacco Industry and Water Management, Belgrade, February, 2012

Table 4. The most important countries for Serbian agriculture regarding foreign trade (in 2011)

Export/ countries	In t	In million $	Import/ countries	In t	In million $
Bosnia and Herzegovina	638,533	465.2	Macedonia	136,690	123.5
Romania	1,245,436	355.3	Germany	40,835	111.9
Montenegro	362,095	328.9	Croatia	100,637	110.6
Germany	110,231	192.3	Brazil	24,389	89.5
Macedonia	246,157	172.2	Italy	48,124	87.2
Russian Federation	188,633	165.7	Bosnia and Herzegovina	71,630	66.1
Italy	366,353	152.5	Hungary	52,408	56.0
Croatia	562,945	114.6	Greece	64,905	55.6
Hungary	185,197	100.3	Netherlands	24,845	51.7

Source: Statistical Office of the Republic of Serbia, http://webrzs.stat.gov.rs/axd/index.php

At the same time, according to the Statistical Office of the Republic of Serbia (*Table* 5.), the cost of food, beverages and tobacco, despite the continuous decline of participation, remains highly represented in the cost of family budgets in Serbia[19]. This share in 2000 was 54.0% and in 2008. 45.8%. This situation points to the still low standard of living and unsatisfying quality of life, since little is left to satisfy other needs that are not existential.

Table 5. Macroeconomic indicators of agriculture in Serbia

Indicator	Unit	2005.	2006.	2007.	2008.
Share of agriculture, forestry and fishery					
In BDP	%	10.3	9.6	8,7	
In employment (Labour survey)	%	23.2	20.5	20.8	21.4
Share of agro-food industry, beverages and tobacco in BDP		4.4	4.7	4.4	
Total		95	100	92	108
Plant production		94	97	82	123
Cattle breeding		101	97	100	97
Share of agro-food industry, beverages and tobacco in family budget	%	41.7	43.4	45.1	45.8
Trade of agro-food products	million EUR	1,353.7	1,713.1	2,035.5	2,327.1
Export	million EUR	731.7	991.9	1,217.9	1,327.3
Import	million EUR	622.0	721.1	817.6	999.8
Foreign trade balance	million EUR	109.7	270.8	400.2	327.5
Share of agro-food products in					
Total export	%	20.3	19.4	18.9	31.3
Total import	%	7.4	6.9	6.1	6.4

Source: Statistical Office of the Republic of Serbia - various publications.

In the field of meat processing industry in Serbia, the level of sophistication of companies (technical and technological capacities, highly qualified personnel) is very different, and this difference is caused by the way of privatization and the amount of capital investment by the new owners. According to the National Rural Development Programme from 2011 to 2013, small number of companies in the field of agriculture and food industry is highly

[19] Statistical Office of the Republic of Serbia, http://webrzs.stat.gov.rs/axd/index.php

sophisticated (companies in the oil industry, beer, milk, confectionery, water treatment industry), while most enterprises significantly differ from modern tendencies.

Low sophistication of business operations and companies' strategies in the meat processing industry is often reflected in the following indicators: (1) low level of innovation in technology and marketing for product development and business processes; (2) orientation to the production of raw materials or products with low added value; (3) low export orientation of companies; (4) slow introduction of the required quality standards and management standards; (5) low utilization of capacities, low products quality/variability of food products quality, discontinuity in the market supply; (5) absence of highly specialized and trained personnel, etc. Low sophistication of the companies and family farms is the result of underdeveloped macro and micro business environment.

Experience shows that in countries with stressed problems in the field of international economic relations, usually lack application of basic principles and concepts of international marketing, as modern concept of creating and achieving competitive advantage and market success in the international and global trade. This is the case with our country, where the enforcement of international marketing is still in its beginning, facing many challenges and problems. The reasons companies turn to the international market are numerous: production, market, technology, competition, finances.[20] It is interesting that for our companies in the sector of meat processing industry primary motive for export is - financial, while marketing and technology are almost unidentified.

International marketing can be defined as a market direction and coordination of business activities for the successful internationalization of companies and their adequate fit into the foreign environment. From the standpoint of the company - the international marketing strategy enables directing marketing activities in a manner that contributes to achieving the goals considered when making decisions about companies' international engagement. At the level of the national economy, designing of international marketing strategy, means achieving a surplus in merchandise trade. The process of creating an international marketing strategy for the company in the meat processing industry involves making a number of strategic plans:

- An analysis of the international environment,
- The international marketing environment should be examined from the standpoint of the political dimensions (indicators of political instability),
- Legal dimensions (specific legal problems, the impact of legislation on the marketing tools, the problem of bribery and corruption etc.),
- Socio - cultural dimensions (problems of different cultures, languages, religions etc.),
- Selection and choice of foreign market,

[20] Rakita, B. (2001): Međunarodni marketing, Ekonomski fakultet, Beograd, Srbija.

- Deciding framework of internationalization and choice of the company presentation on foreign market,
- Selection of the optimal combination of marketing instruments, i.e. decision on marketing mix,
- Creation of appropriate organization for international marketing activities.

2.3. Organizations for the provision of professional services in marketing

Companies in the meat processing industry in Serbia can use consulting services for one-time, additional and complex business activities. Namely, consulting services in the field of industrial marketing and development are presented in 43 consulting organizations in Serbia, of which 42 companies are specialized for organization of procurements *(Table 6)*. In fact, only one consulting organization is specialized for industrial marketing and development.

Table 6. Consulting services in the field of industrial marketing and development

No.	Consulting field	Number of enterprises	In %
1.	Information centers, industrial marketing and development	1	2.33
2.	Consultants for purchase procurement	42	97.67
Total		**43**	**100.00**

Source: www.kompass.co.yu

Consulting organization specialized in market research constitute 14.58% of the total number of consulting organizations. The largest share has consultancy services for market research (47.01%), followed by a market research trough survey of consumers (11.19%) and market research of investment goods (10.45%). At the same time, large share have motivational research services and public opinion polls, marketing studies and research of product market (*Table 7*).

Table 7. Market research

No.	Consulting sector	Number of enterprises	In %
1.	Market research services	63	47.01
2.	Research services regarding market of investment goods	14	10.45
3.	Motivational research services and public opinion polls	10	7.46
4.	Market research trough survey of consumers	15	11.19
5.	Marketing studies and research of product market	12	8.96
6.	Market research, effectiveness of advertising	14	10.45
7.	Market research, agro-food industry	6	4.48
Total		**134**	**100.00**

Source: www.kompass.co.yu

Marketing consulting services are recognized in 139 consulting organizations (the share of 15.12%). Most of consulting service lines in this market segment are (*Table 8*): sales and marketing (47.48%), sales promotion (25.18%) product launching (9.35%).

Negligible is share of consultants for marketing strategy (0.72%), in spite of its significant impact on the performance of the company.

Table 8. Marketing services

No.	Consulting sector	Number of enterprises	In %
1.	Consultants for marketing strategy	1	0.72
2.	Consultants for sale improvement	35	25.18
3.	Consultants for product launching	13	9.35
4.	Marketing services for tobacco industry	3	2.16
5.	Marketing services for agro-food industry	11	7.91
6.	Marketing services for fashion industry	7	5.04
7.	Marketing database services	2	1.44
8.	Consultants for marketing and sale	66	47.48
9.	Marketing services for rubber industry	1	0.72
Total		**139**	**100.00**

Source: www.kompass.co.yu

In the field of indirect marketing stands out: distribution of circulars and patterns, sales improvement, services addressing and services of computational processing of addresses for indirect marketing *(Table 9).*

Table 9. Direct marketing services

No.	Consulting sector	Number of enterprises	%
1.	Consultants of indirect marketing	2	4.54
2.	A sale of the goods by phone	5	11.36
3.	Services of circulars and samples distribution	13	29.54
4.	Services of sale improvement	10	22.73
5.	Direct mail organizations	1	2.27
6.	Services of computational processing of addresses for indirect marketing	5	11.36
7.	Addressing services	6	13.64
8	List builders	2	4.54
Total		**44**	**100.00**

Source: www.kompass.co.yu

Quality standards in meat processing industry - Standards provide a common language for meat processing industry. Thus, communication is easier and marketing is more effective. Standardization helps manufacturers to provide a product that is required and that can be sold and customers to get the quality product they want. Large associations of supermarkets introduce quality standards that production must fulfill. These standards apply to biochemical characteristics, appearance (weight, color, fruit diameter) and the presence of hazardous substances (nitrates and heavy metals, pesticides residuals, phytohormones). It is, above all, EUREGAP 13 for agricultural production and HACCP in food processing industry (Presna, et al, 2006). These standards were developed as a reaction of consumers on unhealthy food appearance during the epidemic livestock

diseases (mad cow disease, foot and mouth disease), and due the fear of the introduction of genetically modified foods.

HACCP standard is a system that identifies, discusses and controls the risks, which are significant for food safety. Risk involves biological, chemical or physical agent in food, with the potential to cause negative effects on human health. The need for HACCP is influenced by several factors: the increasing number of pollutants, increasing health risks because of the chemical pollution of food, increasing the risk of diseases caused by chemical problems in food production, new technologies and lifestyles and lower resistance of the people. Also, the world trade requires international harmonization. HACCP provides a number of advantages. The most important are the following: providing preventative system of food production, more efficient and effective control by the government with fewer inspections, responsibility for food safety is transferred to the food industry and it helps food manufacturers to be more competitive in the world market.

Modern approach of, so called, integrated quality management (TQM) considers strategy of continuous adaptation of the company to requirements of demanding market.[21] Total quality management (Total Quality Management) requires that organizations must be seen to the outside world in the context "do the right things in the right way". However, this aspect of visibility is often poorly presented in the concept of quality management. It is only displayed in the organization's efforts to obtain certificate or other means of differentiation of quality management. In this way, the visibility remains bound to the control that can be proved and to disclosure of public achievements quality, which is commercially motivated.[22] Visibility to the public (in the sense of insight into the processes) that focuses on the added value of the company must go beyond "framed certificate in the management hallway." The goal is to achieve business excellence, based on the strategy of permanent improvement of the quality system, with the participation of all employees.[23]

In all models of quality such as ISO 9000, EFQM model and the "Malcolm Baldridge", there is a focus on external stakeholders. Interest for clients is widespread because the quality is mostly understood as a convenience to use. The one-sided attention to product quality has been gradually replaced by integrated care for the quality of the entire organization. Central role is on good harmonization with the external environment, with clients and with other participants".

[21] Pejanović, R., Tica, N. (2004): Kvalitet kao faktor konkurentnosti agro(privrede) SCG, Ekonomist, 2004, vol. 57, br. 1, str. 202 - 207.
[22] Boje, D., M., R., D., Winsor (1993): The Resurrection of Taylorism; Total Quality Management's Hidden Agenda", Journal of Organizational Change Management. 6, no. 4, pp. 57 - 70.
[23] Pejanović, R., Popov - Raljić, J., Papić, T. (2006): Kvalitet hrane kao faktor konkuretnosti, Savremena poljoprivreda**,** 2006, vol. 55, br. 1 - 2, str. 1 - 7.

Consultants for quality management system - In accordance with the requirements of professional integrity criteria, companies in the meat processing industry should consider the following moral rules when they choose a consultant for the quality management system. Consultants should:[24]

- Avoid or report any conflict of interest affecting the work that needs to be done,
- Maintain the confidentiality of information obtained or taken by the company,
- Maintain independence from the certification body/registration of quality management systems and accreditation bodies,
- Preserve impartiality in the selection of the certification/registration body by the organization,
- To provide a realistic estimation of the cost of delivered consulting services,
- Not to create unnecessary dependence on its services,
- Not to offer services if do not have sufficient competency.

Bearing in mind that in the agricultural sector in Serbia there is a great demand for consulting services in the field of introduction and implementation of standards in production and quality management, we will discuss the required professional competence of consulting organization for this type of consulting projects. Factors of the professional competence represent more developed and somewhat modified form of previous determinants of consultant competence. When selecting a consultant for the quality management system, the organization should evaluate whether the consultant has the competence that corresponds to the scope and content of services that must be provided. Competence is defined in ISO 9000 as a demonstrated ability to apply knowledge and skills. As such it includes: personal qualities, education, knowledge and skills, knowledge and skills specific to quality management, knowledge and skills specific to the organization, work experience, maintenance and enhancement of competence. Personal characteristics contribute to the successful operation of a consultant for the quality management system. In general, a consultant for the quality management system should have many personal characteristics that will facilitate his work in the company. The consultants for the quality management system should have the proper education - it is necessary for the implementation of knowledge and skills related to consulting services provided. In addition, the consultants for the quality management system are expected to understand and apply relevant international standards (ISO 9000, Quality Management Systems - Fundamentals and vocabulary; ISO 9001, Quality Management Systems - Requirements; ISO 9004, Quality Management Systems - Guide to improve performance; ISO 19011, Instruction for verification of systems for quality management and/or environmental management systems), and other international standards. Also, the consultant should be familiar with other standards that are required for consulting services.

[24] Smernice za izbor konsultanata za sistem menadžmenta kvalitetom i korišćenje njihovih usluga, Standard Srbije i Crne Gore, JUS ISO 10019 2005.

The consultants for the quality management system should have a general knowledge of: (a) standardization, and certification systems for accreditation at national and international levels, (b) the processes and procedures for national certification of products, systems and personnel. The consultants for the quality management system must have adequate knowledge of the principles, methodologies and procedures and to be able to implement it. The following list indicates those areas where consultant experience and ability can be useful: the principles of quality management, tools and techniques for continuous improvement; appropriate statistical techniques, methodologies and techniques for testing; economy quality principles, techniques of teamwork; PDCA methodology (Plan - Do - Check - Act); policy development methodologies; process mapping techniques, techniques to solve problems; techniques for monitoring satisfaction of customer/employee; brainstorming techniques. Knowledge of the laws and regulations relating to the activities of the organization and the consultant workload are essential for consulting related to the quality management systems. However, it can not be expected from the consultants for quality management systems to have experience in application of this knowledge before starting their services. Relevant knowledge in this area includes typical requirements of the laws and regulations for the organization's products (such as ISO 9001).

Companies in the agro-complex of Serbia agree on one thing: the issue of prices of consulting services cannot be more important than professional integrity and professional competence of the consultant.[25] Specifically, on a scale of 1 to 5 (1 being the least important selection criterion of consultant; 5 - the most important criterion for selection of the consultant) the price of consulting service has the lowest average rating (3.8), compared to professional competence with honors (4.66). The results of empirical studies are consistent with the recommendations of several international associations of consultants.

For example, the International Federation of Consulting Engineers (International Federation of Consulting Engineers - FIDIC) recommends that customers select a consultant based on ability, not on price. A consultant, as a rule, forms a price and charges for the service in accordance with the usual practice in the profession, and payment of consulting services is contracted prior to starting of work. If the price diverges (higher or lower) than the usual market price, it is necessary to meet the client with reasons for discrepancies. Analysis of the required price often opens the question of the project form and personnel required for its implementation, so this should be considered and specified in the beginning of negotiation. Doing so will eliminate at the start negative effects that can seriously disrupt established good relationships between the consultant and the client, and the smallest differences could jeopardize the implementation of the agreed deal.

[25] Mihailović, B. (2011): Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.

When analyzing the bids of consultant, before it is accepted, the management of company - client pays especial attention to how it is correct, questioning, first of all, if it contains some unnecessary, and, therefore to him, - unfavorable items:

- Consultant suggested an approach that is too expensive (e.g. broad collection of data, the use of samples that are larger than necessary, developing too many alternatives, buy the expensive patent systems or equipment - *hardware*, etc.),
- Project proposal envisages the engagement of highly skilled and more expensive experts (a number of senior consultants) than it is necessary,
- Consultants propose their own people for the jobs that the client can do alone or with a little training and guidance.[26]

2.4. Consulting as a model of learning and enterprise modernization factor in the meat processing industry

A significant problem in the field of training and development in the meat processing industry of Serbia, existing for years, is the lack of transfer of learned knowledge. In many situations knowledge is not transferred in a real working environment. During the consulting intervention participants can be involved in many activities of learning, but it is essential to ensure that this learned knowledge is transferred to the business activities.

Introduction of changes requires from the organization's staff to improve their knowledge, to gather more information, cope with new tasks, improve their skills, and often change their work habits, values and attitudes. This includes changes in people - the management and employees, their skills, motivation, behavior and effectiveness at work. It also includes changes in organizational culture - changes in value, the usual customs, information relations, influences, management style.

Regarding that this is the process of radical changes - it does not happen by itself: learning, effort, perseverance, ability, loyalty and dedication to work have to be performed. However, all this can be achieved, at least for a time, preferably without the help of those who have already collected a large amount of knowledge and experience and all that could successfully transfer to others.

In agro - complex of Serbia, 52.63% of companies were using some form of consulting services. In addition, 19.03% think that in the near future consultants should be engaged (*Table 10*), while the remaining 28.07% of companies did not use consultancy services and do not plan to use consulting services in the future.[27]

[26] Kubr, M. (1995): Kako odabrati i koristiti konsultante: Vodič za klijente, (Prevod), Ekonomski institut, Beograd, Srbija, str. 104.
[27] Mihailović, B. (2011): Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.

Table 10. Use of consulting services in agro - complex of Serbia

Use of consulting services	% of enterprises in agro-complex
Used consulting services	52.63
No, and in the further period will not use the consulting services	28.07
No, and in further period plan to use the consulting services	19.3

Source: Mihailović, B. (2011): Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.

The structure of used consulting services represents a wide range of the consulting projects, so it is often difficult to make a clear differentiation between the various consulting services. For the purpose of analysis and comparison with developed market economies, utilizing consulting services are grouped into specific categories by FEACO classification (European Federation of Management Consulting Associations). Consequently, there are following service lines:[28] corporative strategy (CS), operative management (OM), information technology (IT), human resources (HR), management services and outsourcing (OS). According to the results of an empirical study the greatest demand for consulting services in agro-complex of Serbia refers to the area of operation management and corporate strategy. The participation of the consulting service lines in the total number of used consulting services is 81.8%[29].

For services in the field of corporate strategy important place have market researches and strategic planning, while in the case of service operations management important is use of services in the field of standardization of production, production consulting and creating business plans. Although more than 50% of surveyed companies of agro-complex in Serbia used the consulting services, real insight into the quality of demand is obtained by analyzing its structure. In fact, there are several „external“ imperatives that increase the demand for consulting services.

Firstly, the imperative of standardization, increases demand for the consulting services, because companies can not export goods to the EU market unless they have met certain standards of production. Secondly, the imperative of privatization - since it is a legal obligation of the companies to complete privatization by 2008. Thirdly, the imperative of making a business plan, so that there are documented basis for applying for individual funds, banks and government institutions. If we ignore this type of demand (and bearing in mind the previous structure of demand), then the total demand for the consulting services in agro-complex in Serbia, would be almost halved.

Generally, managers of companies in the meat processing industry call the consultants when they want help in solving the problems they face. The term “issue” is used here to

[28] Survey of the European Management Consultancy Market, the European Federation of Management Consultancies Associations - FEACO, Bruxeles, Belgium, 2004, p. 8.
[29] Mihailović, B. (2011): Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.

denote a situation in which the government, worried about the fate of the company, do not know exactly what to do, where to start or how to proceed. This is, of course, a very general definition of management problems, but it corresponds to reality. Indeed, the range of problems that are delegated to the consultants is very high. From the stand point of quality and seriousness of the situation, consultants can be employed to correct a particular situation (problem correction) to improve the current situation (progressive problem) or to create an entirely new situation (creative problem).

The market research of the consulting services in Serbia shows that companies from Serbian agro-complex seek consultants for: progressive problems: 23.33%; creative problems: 26.67%; progressive and creative problems: 33.34%; corrective and creative problems: 3.33 %, corrective, progressive and creative problems: 13.33%.[30]

It is noticeable that companies from Serbian agro-complex hire consultants most because of the progressive and the corrective problems. No surveyed company uses the consulting services exclusively for the corrective problems. This is somewhat understandable, as consultants avoid companies in crisis of liquidity and solvency, primarily because of fear of an image loss and loss of fees. The nature of consulting requires that any situation should be experienced in the perspective of future opportunities. If you invoke the corrective problem solving, the consultant will always ask you if you really need to improve a bad situation, or whether, instead, it is better to look for new ways to define the goals of the organization, leading to improving operator efficiency activities. The basic corrective problem can be transformed into the progressive or the creative ones.

Consulting is up-to-date and it is invited to help when management has a need for integrated and complex business information. In order to achieve the transfer of knowledge and consultancy for developing managerial skills and abilities, it is necessary to fulfill certain conditions. First of all, the most important is business integrity and competence of the consultant. Business integrity, i.e. ethics of the consultant contributes to the image and reputation, and it is a significant factor in the competitiveness on the market of the consulting services. Cooperation between the consultants and the managers, which is based on the principle of ethics, contributes to the development of managerial skills.

At the same time, it is understood that the consultants and the managers have no hidden intentions and interests, or that the common goal is solving the business problems. It requires business expertise of consulting organization as well as individual consultants, detailed knowledge of the industry in which the client operates, detailed knowledge of the country and the culture of the client, the presence of creativity and innovation. The manager must have the desire to acquire new knowledge and motivation for new developments.

[30] Mihailović, B. (2011): Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.

Comparing the results of the managers in successful companies, the consultants can motivate managers-clients in the direction of continuous learning and improvement. The consultant's work is based on the creation of new solutions. This is accomplished in cooperation with managers, who are active partners with their consultant.

Involvement of managers in the work of the consultants is a basic principle of modern consulting. Integration of the consultants and the managers leads to higher probability of solving problems and increasing knowledge transfer. The role of the consultants is to encourage the managers to think creatively, which is the basis for developing managerial skills. Creative thinking is based on the creation of ideas and their assessment. All ideas are important, especially "crazy" ideas, since in the first stage of thinking it is quantity, not quality. This provides a number of ideas as old ideas encourage new ones.

There are following techniques of creative thinking:[31] 1) Brainstorming method (storm of ideas) allows the researcher to hear a number of ideas in a short time. The BS session involves 6 - 12 people from governing body. Every idea is recorded, promoted and evaluated for easier making of concrete problem solution. It can be heard up to 200 ideas, BS duration is 1 to 2 hours, 2) Synectics. This technique is similar to brainstorming. The session involves 9 members. The procedure of operation is as follows: Purchaser states problems in the company and participants are expected to help him in dealing with them, by giving their opinion and suggestions. After that, the customer considers proposals and what he likes and dislikes. Participants further discuss the problem and so the process continues until they find a good solution. Regarding the technique that is used, according to the same source, it is imperative to respect the following rules:

- Defer judgment - do not criticize any idea too early,
- Let your imagination run wild - free expression of creative ideas will get better outcome,
- Quantity - the more „crazy" ideas, the better the results,
- Cross ideas - a rule that allows the consultant to combine ideas with participants in solving problems and improving them.

Cooperation between the consultants and the managers is beneficial to both. The consultant collects information about the organization and its business, thereby enriching business experience, and thus strengthens business competence. On the other hand, develop leadership skills and abilities, all of which leads to solving business problems. It is necessary to implement the control immediately after the introduction of the changes. Later tests are of low intensity and with less effect, since the process is establishing in new conditions and at the new level.

The consultant has an obligation to point out the characteristic spots of significant variations. Basic assumption is that the client has a constructive approach to solve the problem and there are no hidden interests and intentions. Attention of the consultants has

[31] Živanović, N. (1994): Struktuiranje poželjne konsalting pomoći preduzećima u krizi, Poslovna politika, jun, Beograd, Srbija, str. 39.

evolved from the problem to the process of problem solving and collaboration with the client. After a joint diagnosis of the problem, you need a meeting at which consultant should give feedback to the client on the problem that the client faces. Suitable solutions are obtained through the discussion of consultants and managers.

Often, the best solution is not the final, but the beginning of a new stage of diagnosis and lead to new meetings. The role of the consultant is to give to the manager a new way of looking at the problem, which manager, because of over-involvement in it, is not able to see and assess objectively. The consultant, however, sees the problem with desirable distance, which leads to objectivity in diagnosis. In procedural consulting, objectivity of the consultant surpasses the manager's subjectivity, which will, after several rounds of meetings and diagnosis, also become objective.

2.5. Environmental management consulting

Environmental factor becomes more important, which creates a demand for special consulting services related to the design and installation of equipment to reduce/prevent pollution. The value of investments in the global organic market has grown from 379 billion dollars in 1995 to 518 billion dollars in 2000.[32]

The consulting organizations differ according to the model of financing, organization and process of consulting. Different models of extension are still directly and indirectly determined by the social context in which extension institutions should act.[33] At the same time, it is important to point out the existence of increasing specialization of consultants for specific areas. Specifically, in order to meet the standards in the meat processing industry, it is necessary that consultants have highly specialized knowledge. Specialization of consultants (CMC - Subject Matter Expert) implies the knowledge of specific areas such as socio-economic consulting, environmental consulting, as well as the introduction of new regulations and standards in the EU. Consequently, the assumption of a successful consulting is continuing education of the consultants and exchange of business experience and innovation through the consulting associations.

In this regard, there are strategic planning of development and connectivity of AQIS (System of knowledge and information in agriculture) and various centers for training of counselors. It can be special centers for this purpose, but most often universities, research institutes, schools and different institutions, depending on the needs of advisors, which provide additional training. In this way, the consultants enrich their knowledge and business experience. Acquired knowledge is transferred further and provides solutions for specific business problems of clients.

[32] Janković, D. (2006): Organizacioni modeli poljoprivrednog savetodavstva u Nemačkoj, Ekonomika poljoprivrede, IEP Beograd, Srbija, br. TB (13 - 667), 2006., str. 581 - 588.
[33] Janković, D. (2006): Organizacioni modeli poljoprivrednog savetodavstva u Nemačkoj, Ekonomika poljoprivrede, IEP Beograd, Srbija, br. TB (13 - 667), 2006., str. 581 - 588.

The research results indicate on the lack of awareness regarding socially responsible business, although some positive changes were noticed in terms of compatibility with the current development of the business concept in developed market economies.[34] For the mass use of previous concept is required completion of the transition, thereby creating the conditions for the application of the *triple bottom line* principle, which takes into account the economic, social and environmental criteria.[35]

The consulting services in the field of environmental protection and ecological management provide certain scientific research organizations (institutes), Serbian Chamber of Commerce (SCC), advisory bodies of some ministries, and private consulting organizations which have in their business offers environmental management services.

In the area of environmental management there are at least three types of the consulting projects: (1) diagnosis of ecological conditions, socially responsible business and sustainable development (2) education and implementation of standards of organic production (3) intervention in production and technology. Offer of the consulting organizations depends on needs, i.e. market demand for the consulting services. At the same time, the offer is conditioned with human resource potential of the consulting organization. The most important are the experience and expertise of the consultants who enable to meet the requirements of customers regarding the environmental management.

Substantial support of the consulting services can be seen in the area of development of environmental clusters. Initiatives for the formation of clusters exist in Serbia and in the field of ecology. Enterprises, members of Serbian Ecological Cluster are authorized to takeover and recycle certain types of hazardous and non-hazardous waste. It is important that all companies, members of the cluster, have all the technical requirements, such as documentation required for taking over and recycling the waste. The enterprises, members of the cluster, are authorized providers of activities shown in the following table (*Table 11)*:

[34] Društveno odgovorno poslovanje u Srbiji, Stratedžik Marketing, januar - jun, 2005, Beograd.
[35] Đuričin, D. (2006): Tranzicija, stabilizacija i održivi razvoj: Perspektiva Srbije, Uvodni referat, Miločerski ekonomski forum 2006: Evropski prioriteti i regionalna saradnja, Savez ekonomista Srbije, Miločer, Crna Gora.

Table 11. Areas of consulting services in the environmental cluster

▪ Consulting in imlementation of ISO 9001, ISO 14001, EMAS, BSI OHASAS 18001, HACCP/Codex Alimentarius, EUREPGAP, ISO 17025 , ISO 22000
▪ Creation of report on strategic assessment of plans and programs on the environment
▪ Creation of integrated waste management plans in local municipalities
▪ Creating the projects for applying on domestic and foreign donors, for loans
▪ Creation and implementation of LEAP (local ecological action plans) and Agenda 21
▪ Advisory services in the field of law and policy in environmental protection
▪ Lectures and training of your choice in the field of management systems and the environmental protection
▪ Creation of study on environmental impact and all associated requirements through all phases of the assessment on environmental impact
▪ Creation of risk assessment for chemical accidents
▪ Expertise in the field of ecotoxicology
▪ Production and sale of equipment for the disposal and recycling of raw materials

Experience has shown that the greatest chance for success have clusters (initiatives) that have a consensus on common goals and activities, which have a clear framework for cooperation and that emerged based on their own initiative. In the economy of Serbia, during the Pilot program of clusterization, these are, at the same time, the largest problems. The successful operation of clusters is restricted by high degree of distrust of members, misunderstanding of the concept of cluster, desire for horizontal merger without willingness for deeper cooperation, the emphasis on individual problems and fear of loss of autonomy in making business. At the same time, the lack of institutional underdevelopment and infrastructural support complicate these processes in Serbian economy. Collaboration between universities, scientific research institutions and the corporate sector is not well developed.[36]

[36] Program za razvoj poslovnih inkubatora i klastera u Republici Srbiji 2007 - 2010, Republika Srbija, Ministarstvo privrede.

III THE CURRENT STATE OF LIVESTOCK BREEDING AND MEAT PROCESSING INDUSTRY IN SERBIA

Livestock breeding is one of the two fundamental branches of agriculture, which deals with domestic animals breeding for production of raw materials and food products that are used in order to satisfy human needs (food, leather, wool, feathers). Produced raw materials - meat and milk are then used in the manufacturing industry. In more specific sense, the livestock breeding includes cattle, pigs, sheep, goats, horses, poultry farming and beekeeping.

We distinguish: *extensive farming* concept, which is based on a number of livestock, as well as an *intensive farming*, which is based on the quality of the breed. Consequently, the livestock production, as a basic branch of agriculture, has an important role in creating favorable conditions for improvement of agricultural practices and, together with crop production, completes the process of agricultural production. Domestic animals are regulators of the natural balance, especially in mountainous regions, where, due to grazing, by eating fresh or processed biomass, help the restoration of natural flora of meadows and pastures. Excrement obtained from farmed animals can be used for the production of organic fertilizers - manure and slurry, which are characterized by a high percentage of significant elements for improving physical and biological properties of soil. Elements such as nitrogen, potassium and phosphorus are the most important macro elements in nutrition of field crops, which are then used as fodder for the production of high quality forage. Increased use of organic fertilizers reduces the use of mineral fertilizers, which are characterized as major pollutants in agriculture. In such way you can preserve the environment and prevent pollution of natural resources.

As a branch of agricultural production, the livestock production is characterized by the most rapid turnover of capital in agriculture and it directly depends on all parameters that influence the market, either at the macro or micro level. Current situation in all branches of livestock breeding is unsatisfying, and this is caused by devastation of permanently low subsidies for this agricultural branch. In particular, there is a weak support for producers who are involved in breeding and fattening pigs. Low support from the agricultural budget, low price of raw milk, large fluctuations in the prices of meat and livestock, problems related to the uncertain, unstable and disorganized purchase channels led to a decline in livestock production in the entire territory of the Republic of Serbia.

Due to negative tendencies in the field of animal production, there is a reduction in the number of heads of cattle in all areas of the Republic (especially in mountain regions). That can have negative effect on the genetic resources or complete elimination of certain breeds and species of animals. The entire biodiversity can be affected by this.

The livestock breeding in the Republic of Serbia has a strong genetic basis which should be improved by the relevant selection measures for the purpose of greater production potential achievement. The main problem is lack of skilled labor and unfavorable age structure of the producers. Obstacles that arise can be solved by using methods of molecular genetics, in addition to the existing selection methods. These methods are based on identification of genes that are responsible for specific production traits, after which potential of certain breeds of livestock is promoted faster.

Another way that could improve livestock production, through modification of approach, is the enhancement of organic livestock production. The modern system of organic livestock production is regulated by legislation, which, in addition to defining the quality and characteristics, must take into consideration the control of each production phase of primary products and selling the product on the market. The principle of organic livestock production considers absence of exotic cattle import (which require large investments and increase the level of pollution in agriculture), and reduced use of chemicals, which may pollute the environment. This method of production is intensive and, as such, is based on the quality of different breeds of livestock categories. Production is organized with respect to habitat limitations on which the production begins. Pollution of the environment is limited, which preserve the entire biological community, satisfactory income is achieved and there are possibilities for development of further services.

Such economic activities leads to conservation of cultivated autohotonous breeds of domestic animals, which are incurred in a particular geographic area and which are acclimatized to natural conditions of the area. These animals can be grown traditionally in a free farming system, they use natural pastures and meadows in their nutrition and do not require the intensification of crop production. Great resistance of autochtonous breeds to diseases, enables breeding without major investments in health care and treatment, and in this way one can obtain special quality animal products for human consumption, which does not contain residues of various antibiotics and pesticides. Unfortunately, the status of these autochtonous breeds is unfavorable, most of these varieties is threatened; it can be concluded that this is due to unplanned, and intensive use of cattle, that caused weakening of gene pool and genetic variability of the livestock.

3.1. Livestock biodiversity

Autochtonous breeds of cattle and buffaloes, which can be found on the territory of the Republic of Serbia are: *Busha*, *Podolian cattle, Kolubara cattle*, *Domestic buffalo*. Autochtonous pig breeds are: *Mangolitsa, Moravka, Resavka, Šiska, Šumadinka*. Autochtonous sheep and goat breeds, which originate from this area, are: *Sjenica (Pester) sheep, Svrljiska sheep, Pirotska sheep, Krivovirska sheep, Lipska sheep, Karakachanska sheep, Bardoka sheep, Balusha sheep, Sharplanina sheep,*

Vlashko - vitoroga sheep, Tsigai and Balkan goat. The autochtonous breeds of poultry, which are also endangered and whose number decreases from year to year are: *Somborska kaporka, Banat naked neck, Svrljig hen, Domestic turkey, Domestic goose and domestic duck*.

From the aspect of industrial production and processing, domestic breeds that are being produced because of meat, milk and wool are:

1) Pig breeds produced because of meat are: *Yorkshire* (*Large White), Landrace (Danish, Dutch, Swedish, German, Belgian, Norwegian, Finnish, Polish, domestic meaty pig etc.), Duroc, Hampshire, Pietrain etc.* Foreign breeds significant for our pig production are *large white, landrace, hampshire and pietrain*. White meaty pigs have large fertility. Sows give birth to 8 - 14 and raise 7 - 12 piglets. The piglets weight at birth is 1,3 kg. At four weeks it is 6 - 7 kg and at six months it is 90 - 110 kg. Gilts are mating at 7 - 8 months. The sows which stopped breeding can have 200 - 250 kg. Carcass yield is about 78%, and halves have over 50% of meat. Genetic potential of these pig breeds is expressed only if good nutrition, accomodation and care are provided.
2) Cattle that have mixed production value (they serve as a source of meat and milk: *Simmental breed* (for fattening and milk production), *Monbeliar* (dairy type of simmental breed, good quality meat), *Yugoslav Simmental cattle* (for fattening and milk production), *Black-white lowland European - type cattle* (for fattening and milk production). Special group of the cattle which serve mainly for milk production consists of: *Holstein cattle* (red and black holstein), *American Brown Swiss, Jersey, Guernsey, Danish Red cattle, Norwegian Red cattle etc.* Subgroup of the breeds which serve for milk production are: *Shorthorn, Hereford, Aberdeen angus, Limousin, Main angus, Blonde d'Aquitaine, Piemontese, Romagnola and Belgian blue.*
3) Domestic sheep breeds are: *Tsigai, Domestic Merino sheep, Pramenka sheep*. Pramenka types with fine (-quality) wool: *Sjenica sheep, Svrljishka sheep, Sharplaninska sheep*. Pramenka types with harsh wool: *Pirotska sheep, Krivovirska sheep, White Metohian sheep, Karakachanska sheep, Pivska pramenka, Privorska pramenka.* Foreign breeds <u>for wool production are</u>: *Rambouillet merino sheep, Arles merino, American rambouillet, Australian merino.* Merino breeds are <u>for wool and meat production</u>: *Askanian merino*, *Caucasian merino, Russian merino*. Merino breeds <u>*for meat and wool production*</u> are: *Merino precoce, German mutton merino, Ile de France, Merinolandschaf sheep.* Sheep breed <u>for meat production:</u> a) Fattening longwool breeds: *Leicester breed, Lincoln breed, Texel breed*; b) Meaty medium wool breeds: *Border leicester, German white-headed mutton sheep;* c) Meaty shortwool breeds: *Southdown Sheep, Hampshire sheep, Shropshire sheep;* d) Sheeps for mild production: *East Friesian sheep, Awassi Sheep, Sardinian sheep, Chios sheep*; e)

Breeds with large fertility: *Romanovska sheep, Finnish sheep;* f) Sheeps for fur production: *Karakul sheep.*

4) Goat breeds with production potential for milk, meat and hair production are: Dairy breeds**:** *Nubian goat***,** *LaMancha goat, Alpine goat, Oberhasli goat, Toggenburg goat;* Mountain breeds**:** *Mountain goat, Cashmere goat, Angora goat.* Other breeds**:** *Pygmy goat, Fainting goat*
5) Poultry breeds for production are distinguished by their production capacities. We can distinguish: light breeds for eggs, heavy meaty breeds, mixed breeds, fighting breeds and decorative breeds. The breeds for manufacturing industry are broilers (*Cochinchina (Cochin), Brahma and Langsan*), and for egg production laying breeds (*Plymouth Rock. White rock, Australorp, Wyandott*).

Ministry of Agriculture, Trade, Forestry and Water Management in 2010 adopted Regulation on the list of autochthonous and endangered autochthonous breeds of domestic animals. This list determined minimal number of head of animals by domestic breed needed for genetic reserves. The list was composed based on animal species and desirable sex ratio and it represents the least number of adult domestic animals of certain species needed for breeding and preservation of its genetic diversity (*Table 12*).

Table 12. List of genetic reserves with minimal number of domestic animals

Animal species	Minimal number of animals
Cattle/Buffalos	300
Horses/Donkeys	350
Sheep/Goats	250
Pigs	200
Poultry	300

Source: http://www.cepib.org.rs/wp-content/uploads/2012/05/Geneticki_resursi.pdf

Preservation of genetic reserves of domestic animals can be done in two ways:
1. *In situ or* on *farm* - that considers breeding of live animals in production systems of their birth or they now live and those are farms and production systems.
2. *Ex situ* - that considers breeding outside of production systems where they previously lived and where they were born. That can be: *In vivo* breeding of live animals in zoological gardens, nature parks, museums, research institutes etc. It can be *in vitro* cryoconservation of embryos, sperms, fertile eggs, DNA, somatic cells and other biological material which can be used for reconstruction of animal.

Table 13 - Number of autochthonous species and breeds of domestic animals in Serbia

Species/breed	Number of animals	Number of female breeding animals
Horses		
Domestic mountain pony	80 - 100	35
Nonius	100 - 500	55
Donkeys		
Domestic Balkan donkey	500 - 1,000	300
Cattle		
Podolian cattle	500	250
Busha	500 - 1,000	350
Kolubara cattle	-	-
Sheep		
Sjenica (Pešter) sheep	10,000 - 100,000	-
Pirotska sheep	500 - 1,000	40
Karakachanska sheep	-	-
Krivovirska sheep	500 - 1,000	300
Bardoka sheep	100 - 1,000	50
Svrljiška sheep	10,000 - 100,000	-
Lipska sheep	500 - 1,000	250
Sharplaninska sheep	-	-
Vlashko-vitoroga sheep	500 - 1,000	250
Čokan Tsigai sheep	500 - 1,000	450
Tsigai	12,000 - 15,000	10,000
Goats		
Balkan goat	500 - 1,000	250
Pigs		
Mangalitsa	1,000 - 2,000	600
Resavka	50 - 00	30
Moravka	100 - 500	90
Fowl		
Svrljig hen	500 - 1.000	250
Nacked neck	1,000 - 2,000	750
Sombor hen	500 - 1,000	250
Kosovo singer	10 - 100	-
Geese		
Podunavska	10 - 100	-
Ducks		
Domestic duck	-	-
Turkeys		
Domestic turkey	100 - 1,000	-

Source: http://www.cepib.org.rs/wp-content/uploads/2012/05/Geneticki_resursi.pdf

Almost all these breeds are endanagered. Conservation program is designed and it was being conducted for the past three years for all breeds except Sjenica (Pester) sheep, Svrljishka sheep and all breeds of domestic gees, ducks and turkeys. Conservation program is conducted *in situ*, on farms from many locations. The most significant locations on which conservation is conducted are: Special nature reserve Zasavica, Old Mountain near Dimitrovgrad and Pešterska visoravan for program of buffalo preservation. To preserve these breeds it is necessary to, among other, include

them into organic production systems, to develop systems for animal products with protected geographical origin and to develop agro-tourism in protected areas.

Developed livestock breeding and production of high - quality livestock breeds is the basis for the development and improvement of existing meat processing industry. Meat processing industry contributes to strategic positioning of the producers' country, through creating of products with the geographical origin.

3.2. Cattle fund

The cattle fund represents a number of cattle animals in agricultural organizations, individual agricultural husbandries and non - profit households. Number of cattle in period 2001 - 2010, at the level of the Republic of Serbia and its regions is presented below (*Table 14*). The main parameter is number of head of cattle at the end of observed year.

Table 14. Number of cattle in period 2001 - 2010, in thousand

Year*	Republic of Serbia	Central Serbia	AP Vojvodina
2001	1,177	962	215
2002	1,112	897	215
2003	1,102	885	217
2004	1,079	867	212
2005	1,096	867	203
2006	1,106	0	0
2007	1,087	0	0
2008	1,057	794	263
2009	1,002	0	0
2010	938	0	0

Source: Statistical Yearbook of the Republic of Serbia, 2002 - 2011, RZS, Belgrade.
*Withouth data for Kosovo and Metohia

According to data of the Statistical Office of the Republic of Serbia, the number of cattle in observed period decreased lineary, starting from 2001, when there was 1,177 head of cattle at the level of the republic, of which 81.73% was on the territory of Central Serbia and 18.27% on the territory of AP Vojvodina. The least number of cattle in the Republic was in 2010 (938,000). In 2001, on the territory of Central Serbia was 962.000 heads of cattle and in AP Vojvodina 215,000 heads of cattle. In Central Serbia the least number of cattle was recorded in 2008 and it was 794,000 heads of cattle, while on the territory of AP Vojvodina there was a constant derease of number of cattle in period 2001 - 2005, when there was recorded 205,000 heads of cattle. In 2008, there was increase of the number of cattle on the terrotpry of AP Vojvodina for 29% and there was 263,000 heads of cattle. Data about the number of cattle on the territory of Central Serbia and AP Vojvodina for 2006, 2007, 2009 and

2010 are not presented. Based on derived data, it can be concluded that cattle breeding is decreasing, which directly impacts the producction of fresh beef and beef products, as well as their price on the market.

Number of pigs at the end of the years is presented below (*Table 15*). The pig breeding is characterized by negative investment trend in production expanding, regardless on the largest consumation of this meet type on the teritory of the Republic of Serbia.

Table 15. Number of pigs in the period 2001 - 2010, in thousand

Year*	Republic of Serbia	Central Serbia	AP Vojvodina
2001	3,587	2,340	1,247
2002	3,634	2,323	1,311
2003	3,439	2,101	1,337
2004	3,165	1,975	1,190
2005	3,212	1,966	1,246
2006	3,999	0	0
2007	3,832	0	0
2008	3,594	2,230	1,364
2009	3,631	0	0
2010	3,489	0	0

Source: Statistical Office of the Republic of Serbia, 2002-2011, RZS, Belgrade.
*Withouth data for Kosovo and Metohija

The production of pigs in the Republic of Serbia is characterized by an oscillation in increasing or reducing the number of animals per year. In the course of 2006, we have seen the largest number of pigs, which was 3,999 thousand of pigs in all categories. Low productivity has recorded in 2004, when it was noted 3,165 thousand of pigs for the entire country. At the level of central Serbia, the largest productivity was recorded in 2001, when the share of the number of pigs accounted for 65.24% of total capacity (number of animals).

As well as for the whole country, it is evident a fluctuation in the production, so the number of pigs is changing from year to year, that is to say, the number of animals is, alternately, increasing and decreasing. At the level of AP Vojvodina, it can be concluded that in the period 2001 - 2003, there was increasing the number of pigs, which ranged from 1,247 thousand animals in 2001, to 1,337 thousand animals in 2003. In 2004, there was a significant decrease of production. 2005th is characterized by an increase of the number of pigs, and thus the share in the total production (37.95% of total pig production in the Republic of Serbia). As in the case of cattle, there are no data in literature regarding pig distribution by regions (2006, 2007, 2009, 2010).

The fluctuation of the pig production in the period 2001 - 2010 occurs as a result of under-investment in the industry and the high price of livestock feed on the market, due to the drought that has affected crops that are used in swine nutrition. Price of fatlings on the market increased, which is a consequence of fewer pigs than in the previous period.

The reason why it would be desirable to invest more in pig production, is because nearly 60% of meat demand is settled by pork. It is necessary to emphasize the economic importance of production, which is characterized by two production cycles, conditioned by pigs fertility, which give birth twice a year, and under optimal conditions, even five times in two years.

Number of sheep at the end of each production year is presented below (*Table 16*). Sheep farming is of great importance, because sheep are in the group of ruminants, which transform fodder into high - quality products of high value, such as meat and milk. In addition to these products, sheep also give wool, leather and fur. In countries with developed economies, this category of meat and products derived from them are considered to be better than other types of meat. Wool, fur and skin are valuable raw materials for industry and handicrafts. Wool fibers, due to their physical - chemical characteristics, have not been replaced with synthetic fibers or other natural resources in the textile industry.

Table 16. Balance of heads of sheep in period 2001 - 2010, in thousand

Year*	Republic of Serbia	Central Serbia	AP Vojvodina
2001	1,448	1,308	140
2002	1,516	1,358	158
2003	1,586	1,388	198
2004	1,576	1,381	195
2005	1,609	1,408	201
2006	1,556	0	0
2007	1,606	0	0
2008	1,605	1,352	254
2009	1,504	0	0
2010	1,475	0	0

Source: Statistical Yearbook of the Republic of Serbia, 2002-2011, RZS, Belgrade.
*Without data for Kosovo and Metohia

The sheep farming on the territory of the Republic of Serbia is characterized by an oscillation in the number of sheep by years. A growth trend is characteristic for the first three years of observation, when in 2001, was recorded 1,448 heads of animals, until 2003, when there was recorded 1,586 heads of animals. Till 2010, the production has been satisfactory, with little oscillations. In Central Serbia, the number

of sheep had the same trend as recorded on the territory of the entire republic. The most intensive sheep production was achieved in 2005, when there was recorded 1,408 heads of animals, which is 87.51% of the total stock of sheep. According to the data of the Statistical Office of the Republic of Serbia, years 2006, 2007, 2009 and 2010 had not been productive. At the level of AP Vojvodina, the sheep production is not developed as in Central Serbia, so the largest production of all sheep breeds was recorded in 2008, when there was recorded 254,000 heads of animals, which was 15.83% of the total sheep production in the Republic of Serbia. As in the case of Central Serbia, in Vojvodina there are no data about the production in 2006, 2007, 2009 and 2010. Number of poultry, at the end of each year, in the Republic, Central Serbia and in Vojvodina is presented below (*Table 17*).

Table 17. Balance of poultry in period 2001 - 2010, in thousands

Year*	Republic of Serbia	Central Serbia	AP Vojvodina
2001	18,804	12,239	6,565
2002	17,677	11,430	6,246
2003	16,280	10,543	5,737
2004	16,631	10,808	5,823
2005	17,905	10,601	7,304
2006	16,595	0	0
2007	16,422	0	0
2008	17,188	9,824	7,364
2009	22,821	0	0
2010	20,156	0	0

Source: Statistical Yearbook of the Republic of Serbia, 2002 - 2011, RZS, Belgrade.
*Without data for Kosovo and Metohia

Thanks to production rate, possibilities of ambient control, reliable health protection, industrial principles and use of poultry feed and marketing, the poultry production has the constant growth in developed countries, where it participate in consummation with 25% of total demand. In the last two decades, the production on the territory of the Republic of Serbia has decreased by 2 - 3% annually. For the observed ten-year-lasting period, the production balance, at the end of the year, was positive with a smaller oscillation within a year. The lowest productivity at the level of the republic was recorded in 2007, when it was recorded 16,422 animals, while the most intensive production was recorded in 2009, when the poultry fund was amounted 22,821 animals of all categories.

At the level of Central Serbia, poultry production is characterized by annual oscillations, with the lowest of 57.16% recorded in 2007 (which is also the smallest share), up 65.09% at the end of 2001, in compare to the overall productivity of poultry production in Republic of Serbia. At the level of AP Vojvodina, poultry production was slightly lower than in Central Serbia, but the development of the meat-processing industry and the subsequent processing of poultry meat in all

categories are at high level. The highest productivity was recorded in 2007, when at the territory of AP Vojvodina was 7,364 head of animals i.e. 42.84% of the total poultry production in the Republic. The lowest productive capacity was in 2003, when it was recorded 5,737 head of animals of all categories. It should be noted that there are no data on the production of poultry in Central Serbia and Vojvodina in 2006, 2007, 2009 and 2010.

Development of livestock production is one of the parameters of agricultural development of the observed region or the country. The Republic of Serbia has a problem in the form of cattle stock reduction, which is reduced by approximately 2% from year to year. Consequences of bad investment moves, lack of incentives and subsidies are large, destroying the primary livestock production, which leads to a reduction in the volume of production of meat and milk, which encourages the import, which can significantly increase the cost of finished products available to consumers on the market.

The requirement for the future development of the meat-processing industry is definitely in securing domestic sources of quality meat of all types and categories, and the connection between all actors, starting from primary producers and finishing with consumers. Ensuring stable market for the sale of live domestic animals, meat and meat products must be primary task of all authorities, for the purpose of establishment of chain, where all subjects are satisfied by accomplished profit.

The increase of cattle production in the Republic of Serbia can be achieved through investment in selection and reproduction of different breeds and species of domestic animals, with preservation of native species, characteristic for the area in which they are kept.

3.3. Production of meat and meat products

Breeding of domestic animals is done for servicing human needs for meat, milk, and other animal products (eggs, wool, fur, leather). Further processing of meat obtains products, which are the basis of development of meat processing industry.

According to the regulation on quality and other requirements for meat products, the meat products are foods obtained by different technological methods of processing and preserving the meat, of other basic ingredients and additional components. The main ingredients of meat products are: meat, fat, connective tissue, liver, mechanically deboned meat, blood and blood products. Additional components of meat are: salt, spices, spice extracts, additives, flavorings, enzyme preparations, sugars, carbohydrates, bacterial cultures, gelatin, protein products, fibers and other nutrients.

Table 18. Production of meat, in 000 t

Type of animal	Beef	Mutton	Pork	Poultry
Republic of Serbia				
2001	93	17	253	62
2002	97	15	277	65
2003	95	17	258	59
2004	93	20	242	65
2005	90	21	253	67
2006	83	20	255	75
2007	95	20	289	70
2008	99	23	266	76
2009	100	25	252	80
2010	96	23	269	84
Central Serbia				
2001	72	16	158	29
2002	75	14	178	31
2003	73	16	164	29
2004	71	18	149	32
2005	69	19	149	33
2006	61	18	150	32
2007	68	17	148	31
2008	72	20	137	33
2009	74	21	140	35
2010	70	19	153	32
AP Vojvodina				
2001	21	1	95	33
2002	22	1	99	34
2003	22	1	94	30
2004	23	2	93	32
2005	21	3	104	34
2006	23	3	105	43
2007	26	3	141	39
2008	27	3	129	43
2009	27	3	113	45
2010	27	3	116	52

Source: Statistical Office of the Republic of Serbia, Production of animal products, 2001-2010, Belgrade.

The beef production in the Republic of Serbia recorded a positive growth rate, but in some years does not satisfy the total demand for meat obtained from local sources, and the needs are being settled by import of the beef. The largest beef production was acomplished in 2009, in quantity of 100 thousand tons. Such production capability is the result of stabilization of the production in the previous period. However, it is necessary to increase production to recover cattle production and create opportunities for market surpluses. At the level of central Serbia beef production, accounts for more than 2/3 of the total production, with share of 78% of the total production. A presence

of the beef production at the level of AP Vojvodina is declining, regardless the natural advantages of the region.

Production of mutton is not developed branch of the industry, which is the result of poor sheep stocks. The mutton production ranges from 15 thousand tons recorded in 2002, up to 25 thousand tons in 2009. The meat production is the most intense at the level of Central Serbia, where there was the lowest production in 2002, and the highest in 2009. In Vojvodina, the mutton production is presented, and the share of total production potential is ranging from 6.67% (2002) to 12% (2009).

The production of pork and manufactured products is the most common type of meat processing in Serbia. More than half of meat demand is settled by the production, although this is the production, which recorded a minimum investment activities. „*Pork has 58% of market share, and it is the most important type of meat in the population's nutrition of Serbia. Of the total number of pigs, 62% is on the farms in central Serbia, and 38% is on the farms in Vojvodina. Pig breeding in Serbia had an uptrend untill the mid 80's of the last century, when the total number of pigs reached 5,5 million. After that, there was declined the number of pigs, mostly on the territory of Vojvodina*.“ (Popović, Knežević, Štavljanin, 2010). At the level of central Serbia, the pork production is positive and constant in the observed years. In Vojvodina, the production marked increase in the total production in the period 2005 - 2008, with decline in 2009 and 2010, due to the crisis.

The poultry production has increased in the total consumption of all meat categories at the territory of the Republic of Serbia. Poultry production is more intensive in Vojvodina in comparison to Central Serbia.

Due to large droughts, which inevitably affect crop yields used for the production of fodder, there is the increase of meat price on the market, or producers destroy their herds, due to their inability to feed them. This has an impact on the meat processing industry, the growth of prices and purchasing power of the population.

3.4. Fodder production

Fresh and processed feed is of great importance for successful breeding of all categories of livestock. Fresh food provides enough amounts of proteins, carbohydrates, lipids, vitamins etc. Processing of biomass in hay, haylage and silage, also has a positive effect on the total weight increase of cattle and has an impact on the quality of the meat, which is then used in the manufacturing industry.

Selection of plant kinds for forage production depends on their nutritional value, as well as on the domestic animal for which is produced. Today, we can find on the market finished products for animal nutrition, which are designed for all categories of

animals. The price of feed is mostly affected by the prices of basic raw materials on the market, primarily corn, wheat, alfalfa, sunflower, soybean and soybean meal.

According to the *Regulation on the quality and other requirements for feed* („Official Journal of SRY“, no. 20/2000 and 38/2001 and „ Official Gazette of RS“, no. 4/2010 - other rules), the feed is a product obtained in accordance with the established technological procedure using appropriate raw material, in the form of:

- Nutrients,
- Premixes,
- Mixtures,
- Allowed additives.

Nutrients, in terms of this regulation, are products of plant, animal and mineral origin, produced naturally or industrially, used for animal feed and production of premixes and mixtures. Nutrients, in terms of this regulation, are classified into groups: grain feed, grain mill products, products of the starch industry, products of the alcohol fermentation industry, products of the sugar industry and by-products of the sugar industry and the industry of ascorbic acid production; products of oil industry; dried plant products, other plant products; nutrients of animal origin; nutrients with the addition of non-protein nitrogen compounds; mineral nutrients.

Premixes, in terms of this regulation, are the products with a high content of vitamins, minerals, amino acids and allowed additives, which are homogeneously mixed with the carrier. They are used for animal feed in combination with nutrients or for production of mixtures.

Mixtures, in terms of this regulation, are the products obtained by mixing the nutrients and feed additives, in such ratio, that it can serve as a complete or supplemental feed.

Feed additives, in terms of this regulation, are substances that are added to animal feed to improve its biological-nutritional value and the quality of better use and durability prolongation, easier technological process for the preparation of mixtures and coloring of meat and poultry eggs.

Feed additives are: vitamins and pro - vitamins, microelements and minerals, non-protein nitrogen compounds, amino acids, other allowed additives.

The following categories of nutrients are available on the market: complete mixtures (concentrates), additional mixtures (super-concentrate), premixes, milk replacements (powder milk), briquettes, pellets, oil cakes, corn meal.

Fresh pasture, hay or silage are dominating in cattle feed. Use of meadow hay satisfy the needs regarding dry matter, cellulose, volume and quantity of the nutrients that stimulate a digestion of the ruminants. Great effects on fattening of cattle has the use of corn silage, dry sugar beet pulp, sunflower meal and pasture. The use of concentrates is envisaged in smaller quantities during winter, with 14% of proteins, and in summer with 12% of proteins.

For the production of pigs, in the beginning of fattening, it is necessary to feed with easily digestible food, such as the use of grains (corn and soybean meal), and after few weeks you can move on to using other components of feed. To increase the proportion of meat, food for begining of fattening contains all essential amino acids in sufficient amounts for protein synthesis. There is very important to add premixes with balanced proportion of vitamins.

When feeding the sheep, the most important role in the daily increment of meat, milk and wool has sheep grazing and satisfying the needs for fresh biomass. If it is not possible to provide a sufficient duration of grazing, one can combine the use of silage, hay, protein components and quality concentrates.

Feeding of poultry, due to its significant role in the profitability of production, is the main limiting factor for the organization of production of poultry meat and eggs. Out of the total production costs, 70% goes on consumption. Today, in poultry production are used hybrids with high genetic potential that can be manifested only with the use of optimal and balanced concentrate mixtures, according to the needs of poultry hybrid, its physiological condition, production direction and age.

The poultry meat products are diverse and very nutritious. Broilers' white meat contains 20% of high - quality proteins and only 1 - 2% of fat. Each manufacturer recommends the nutrition program, according to its genetic potential, so he could show his best production performances. Basically, all programs contain recommendations for fattening of light (1.5 to 1.75 kg), medium (1.75 to 2.2 kg) and heavy broilers (2.2 to 2.5 kg) on the basis of final body weight. In modern farm conditions, for a period of 42 days, the broilers increase body mass more than 50 times, when the consumption is of 1.8 to 1.9 kg of feed per a kg, and reach in this age body weight of 2.2 to 2.5 kg. To achieve these production characteristics in modern hybrids, it is used high - energy feed concentrates, balanced by the necessary nutrients and needs of each hybrid.

3.5. Traditional and autochthonous meat products

Autochthonous production of traditional meat products is largely different than the industrial production. Namely, autochthonous production is a traditional method of meat products making, which can be conducted in smaller workshops while industrial

production is adjusted to industrial conditions. Then, in autochthonous production when making the product one does use neither additives nor starters, which are allowed in the process of industrial production of traditional products. Products maturation to final product is conducted in natural conditions while in industrial production maturation is conducted in controlled environment. Considering the specificity of production, in autochthonous production in small workshops, one can produce much smaller quantities of some product than in industrial conditions. In autochthonous production of traditional products is used meat of older animals and the production process starts in late autumn and lasts during winter, in natural conditions of drying and ripening. Traditional products produced on autochthonous way have specific sensory properties and are very valuable at the market.

In Serbia, the most known autochthonous meat products are: kulen, sremska kobasica, sujuk, pirotska „ironed“ sausage, domestic dry ham, užička beef ham, užička pig ham, dried bacon, sheep prosciutto and pastirma.

Kulen is produced in various areas in Republic of Serbia and there are sremski kulen, petrovački kulen, kisački kulen, lemeški kulen etc. For production is used pig meat with 10% of fat tissue, with addition of salt, red ground paprika and garlic. Sausage casing is natural pig intestine and drying and ripening lasts from three to six months. For smoking is used beech, cherry or acacia.

Sremska sausage is also produced of pig meat with 25% of fat tissue. The product's drying and ripening lasts from four to six months, is added salt and red ground paprika. Sausage casing is also natural presented by pig's small intestine.

Sujuk is a product with specific shape similar to horseshoe, which is produced of beef, fat tissue, salt and additions such as garlic, ground pepper and paprika. Sausage casing is presented by natural beef intestine. Product maturation lasts till four weeks.

Pirotska „ironed“ sausage is produced of sheep meat, goat meat and beef. During the production process, meat is minced several times and salt, paprika, garlic and pepper are added. As in the case of sujuk, its shape resemble horseshoe, but in the production process its being regularly „ironed“. Drying and maturation lasts few weeks.

Domestic dry ham is produced of legs of older pigs with addition of salt. Then, meat is smoked and dried and the entire process lasts for one year.

Užička beef ham is produced of beef legs and loins. Meat is treated with mixture of salt and sugar, rinsed, drained, smoked, dried and left to ripen. Entire process lasts about three to fourth weeks.

Užička pig ham is produced of pig meat and that of legs and/or back. Meat is added the mixture of sugar and salt, and after few week, meat is rinsed, drained, smoked, dries and left to ripen for a few weeks.

Interesting products are also *dried bacon* produced of pig meat and *sheep prosciutto and pastirma* produced of sheep body or goat body (pastirma) without bones. It being salted smoked and dried.

Traditional products produced in authentic way are very delicious and attractive for consumer but in their production special attention should be given to products safety. Namely, slaughtering of animals must be in objects which fulfill veterinary - safety conditions and under supervision of inspection. Factors such as smoking, temperature, air moisture, protection from insects and rodents must be provided. Legislative which prescribes veterinary - sanitary conditions that objects for autochthonous meat products production must fulfill, in terms of small producers, does not exist. Its creation and adoption is necessary because in that way small producers could register their production and legally perform at the market.

Besides autochthonous production, geographical origin of the product is also important. Namely, products with geographical indication of origin are more valuable at the market and thus their price is higher. Origin indication is a sort of synonym for products with quality guaranty. These products are very important for countries in development because they can be very high valued and wanted at foreign market. Namely, about 40% of European consumers are ready to pay 10% higher price for products with geographical indication of origin.

Some product that could be recognized at foreign market as products with geographical indication of origin is for example sremski kulen, traditional specialty from Srem, Vojvodina. It is being produced of I category meat and spices and it should be emphasized that there is no unique model of production for this product. So, it is necessary to unite producers for the purpose of production of product with standard quality with protected geographical indications of origin.

Geographical indications of origin already registered in Intellectual Property Office of Republic of Serbia are: užička beef ham, užička pig ham, užička bacon, sremski kulen, sremska sausage, sremska salami, požarevačka sausage, petrovačka sausage, leskovačko grill meat (for pljeskavica and ćevap) and valjevski duvan čvarci. These products, as well many others except them, are attractive for foreign market can be integral part of gastronomic offer of Serbia important for development of tourism and incomes for small multifunctional households. In some regions of Serbia are organized manifestations aiming to promote local meat products. So, in Vojovodina is organized *kulenijada* - festival of petrovački kulen and in Leskovac, Eastern Serbia is organized *roštiljijada.*

It should be emphasized that autochthonous meat products could be produced of organically bred autochthonous breeds of domestic animals. Namely, autochthonous breeds are very well adjusted to local ecological conditions and therefore are more resistant to diseases. Farmers which keep autochthonous breeds can produce quality products of recognizable origin which will satisfy the needs of consumers and provide income source. Good example for breeding of autochthonous breeds is breeding of pigs - mangalitsa and moravka of which great quality kulen can be produced. At the EU market are much known and highly valued meat products of autochthonous pig breeds such as mangalitsa. The cause of this is probably consumer's opinion that such meat is much healthier because it has more unsaturated fatty acids and less cholesterol in compare to meat of more fatty pigs.

Traditional and autochthonous meat products could be integral part of tourist offer of Serbia. Food and tourism are inseparable so the tourist offer of some country should be improved by expanding assortment of offered products i.e. brands. Gastronomic offer can serve as very good way to make these regions more familiar for guests from foreign countries.

IV LEGISLATION AND TRADE

4.1. Agricultural budget and analysis of incentives for livestock production

Agriculture and agro-food industry of the Republic of Serbia are the basis of economic activities and the only economy sectors which achive foreign trade surplus. All other economy activities have foreign trade deficit and impact the level of debtness. The dominant source of investments in agriculture comes from the agricultural budget, which is of great importance for husbandries that live of this production and it helps them to realize continuous production. Although budgetary allocations are small, that percentage of the national budget has contributed to the maintenance and survival of a number of husbandries. In terms of nominal and real decline of the agrarian budget, large number of agricultural husbandries with the status of physical persons are already on the edge of existence and the question is how they will start production in the next years. All this represents an extreme risk for the State which has difficulties in resisting the negative trends. The following table analyzes the agrarian budget in the period 2004 - 2011 (*Table 19*).

Table 19. The share of the agricultural budget of Serbia in total (2004 - 2011)

Year	Total expenditures for the acquisition of non-financial and financial assets (RSD)	Resources of agrarian budget (RSD)	The share of agrarian in total budgetary expenditure (%)	Agrarian budget expenditures from additional revenues (RSD)	Participation of increased agrarian budget in total budget expenditures (%)
2004	362,045,252,000	18,059,553,000	5.0	2,085,000,000	5.6
2005	400,767,778,000	16,269,962,000	4.1	2,713,600,000	4.7
2006	505,820,302,000	23,593,481,000	4.7	3,950,401,020	5.4
2007	595,517,786,100	21,410,029,000	3.6	4,685,722,714	4.4
2008	695,959,075,793	27,634,337,342	4.0	5,261,031,735	4.7
2009	719,854,143,000	15,964,071,000	2.2	10,726,385,000	3.7
2010	762,971,000,000	19,907,945,000	2.6	5,713,865,000	3.4
2011	818,344,423,000	22,033,208,000	2.6	10,560,020,000	3.8

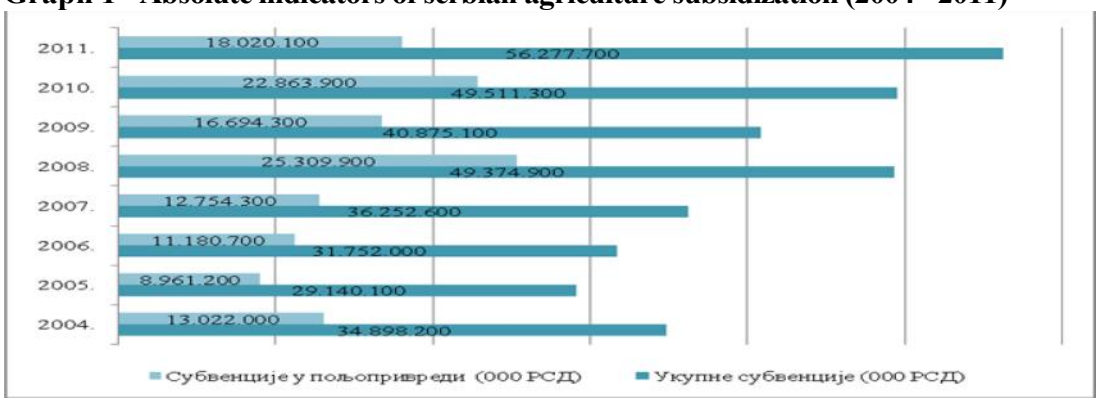
Source: Stanković Vojislav (2011): Poljoprivreda Srbije - Između mogućnosti i izazova, presentation, Regional Conference dedicated to agriculture Agribiz 2011 - Grow your business, Belgrade, Serbia

Table indicates the low share of budgetary assets for continuous development of agriculture. Analysis of the agricultural share in total budgetary expenditures showed variation of 2.2% (2009) to 5.0% (2004). The share analysis of increased budgetary allocations (present agrarian fund plus additional incomes) showes percentage of 3.4% (2010) to 5.6% (2004). Generally, the agrarian budget shows low allocations in the overall budget of Serbia, which vary in period 2004 - 2008. In 2008, it accounted for 4.0% of the total budget, and in 2009 it was halved (2.2%). The percentage share of agrarian budget in total in 2011 (2.6%) was two times lesser than in 2004 (5.0%). On one hand, total expenditures and expenditures for the acquisition of non-financial

and financial property are raising (in period 2004 - 2011 they were increased 2.26 times), and on the other hand, the agrarian budgetary allocations vary (in the same period it was increased 1.22 times). The increase of total budgetary resources does not mean a proportional increase in allocations for the agrarian budget for the further development of agricultural production, making it difficult for future growth and development. Budgetary incomes and expenditures for the period january - july 2012 suggest a deficit in the budget in the amount $94 billion. At the same time, revenues were RSD 413.4 billion and expenses were $507.4 billion. However, only month of july recorded a budgetary surplus of $5 billion, with $74.5 billion of revenues and $69.5 billion of expenditures.

In addition to the agrarian budget of the Republic of Serbia and the budget of AP Vojvodina, most municipalities provide additional resources for agriculture and rural development in Serbia. Large number of donors support this sector through various developmental projects. Additional resources for improvement of the competitiveness of agriculture and processing industry will be provided if the conditions for the use of IPA funds are met. All these funds should be directed toward achieving of goals set by the National Program of Agriculture and routed through official channels and institutions: national, provincial, regional, local. It is important to ensure the coordination between different projects and thus avoid possible duplication (MoA, 2010). In table of agrarian budget expenses from additional incomes in period 2004 - 2009 (*Table 19*) it is shown that there was a tendency of constant growth and that it was increased 5 times. In 2010, in compare to 2009, it was decreased for about 2 times and doubled again in 2011 (RSD 10,560,020,000), but the value was lower than in 2009 for about RSD 166,365,000 i.e. 1.6%. With introduction of additional incomes in available agrarian budget, participation of agrarian budget was increased for about 0.7% and in certain years even more (in 2009 of 1.5%, and in 2011 of 1.2%). The next graph (*Graph 1*) shows tendencies regarding agricultural subsidies in period 2004 - 2011.

Graph 1 - Absolute indicators of serbian agriculture subsidization (2004 - 2011)

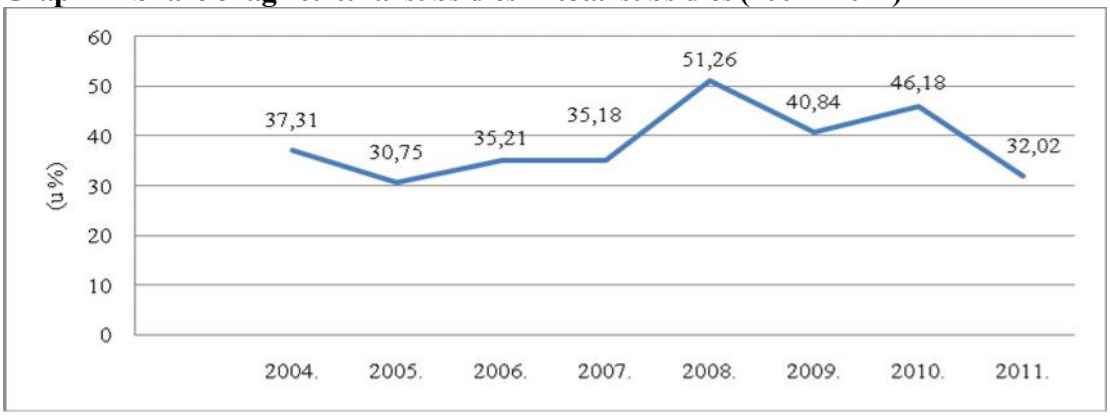


Source: Ministry of finances (2012): Public Finance Bulletin no. 89 for January 2012, published March 2012, Belgrade, republic of Serbia , p. 55.

Note: In order of appearance: * agricultural subsidies, ** total subsidies

In analyzed period presented at above, absolute indicators show constant oscillations (*Graph 1*). The highest value of total subsidies in Serbia were in 2011, and the lowest in 2005. Value of agricultural subsidies was the highest in 2008, and the lowest in 2005. The next graph (*Graph 2*) shows the share of agricultural subsidies in total subsidies (2004 - 2011).

Graph 2 - Share of agricultural subsidies in total subsidies (2004 - 2011)



Source: Ministry of finances (2012): Public Finance Bulletin no. 89 for January 2012, published March 2012, Belgrade, republic of Serbia, p. 55.

Relative indicators of agricultural subsidies show great oscillations. Maximal participation was in 2008 (51.26%) and the lowest was in 2005 (30.75%). However, share of agricultural subsidies in 2011 (32.02%) were at significantly lower level than in all other analyzed years (except in 2005). With such low budgetary resources and withouth long - term plan significant progress in agricultural production can not be expected.

In 2012, Ministry of agriculture, trade, forestry and water management brought set of regulations regarding agricultural production, which are categorized in groups: *indirect* (premiums, refunds, incentives for the production and the support of non-commercial agricultural husbandries), *market* (export potential, storage expenses and credit support) and *structural incentives* (rural development measures, measures for improvement of protection and quality of agricultural soil, measures of institutional support). From a range of adopted regulations, below are presented incentives for livestock production:

- *Regulation on conditions and use of funds for insurance costs reimbursement of animals in 2012.* Holder of agricultural husbandry has the right to use funds for insurance costs refund in amount of 40% of the insurance premium, withouth calculated tax on non-life insurance premium, if the insurance company insured animals from the risks listed in conditions of insurance companies,
- *Regulation on conditions and use of incentives for support of basic herd purchase in pig breeding in 2012.* Right to use incentives has a person which bought quality breeding animal after this regulation came into fact and if that animal is used for

further reproduction at own husbandry in the next three years. Incentives are given as irreversible funds in amount of RSD 10,000 by quality breeding animal,

- *Regulation on conditions and use of incentives for support of basic herd purchase in sheep breeding in 2012.* Right to use incentives has a person which bought quality breeding animal after this regulation came into fact and if that animal is used for further reproduction at own husbandry in the next four years. Incentives are given as irreversible funds in amount of RSD 5,000 by quality breeding animal,
- *Regulation on use of incentives for fattening of young cattle.* Right to use incentives has a person which produced its own fattening cattle in 2012, that is imported that cattle in 2012 and if that cattle already was or will be a propriety of that person at least 185 days and if it was intended for meat production and if, after fattening, it will be given to slaughterhouse. Incentives are given for fattening young cattle in amount of RSD 5,000 per animal,
- *Regulation on use of incentives for pig fattening in 2012.* Right to use incentives has a person if fattening cattle, intended for meat production, is given to the slaughterhouse after this regulation came into fact. Incentives are given for fattening pigs in amount of RSD 500 per animal,
- *Regulation on distribution and use of incentives for genetic improvement of cattle breeding in 2012.* Incentives are payed as amounts of money per head of quality domestic breeding animal and that for cattle, sheeps, goats and swines and per number of animals:

    - At least 1 and at most 30 animals for quality breeding first calving (RSD 25,000 per animal),
    - At least 4 and at most 100 animals for quality breeding cows, in areas with difficult working conditions in agriculture at least 3 and at most 100 animals (RSD 25,000 per animal),
    - At least 30 and at most 150 animals for quality breeding sheeps (RSD 4,000 per animal),
    - At least 10 and at most 150 animals for quality breeding goats (RSD 4,000 per animal),
    - At least 15 and at most 100 animals for quality breeding sows (RSD 4,000 per animal).

- *Regulation on establishment of credit support program for cattle breeding development in 2012, through subsidy of a part of interest.* Person has the right on support if it purchases: quality breeding heifers and cows; calfs for fattening up to 300 kg; quality breeding ewe lambs, sheeps and rams; quality breeding lambs; lambs for fattening up to 20 kg; quality breeding goats, male goats and goatlings; goatlings for fattening up to 15 kg; quality breeding gilts and boars; pigs for fattening up to 50 kg; quality parent flocks (chickens, turkeys, geese, ducks, guinea fowls); day-old chicks for fattening; swarms of bees formed on five standard frames and bee queens; fish brood for fattening; food for animals. Credit user is required to sign credit insurance policy for animals which are being insured for

minimal scope of coverage with insurance agency. Annual premium rate is from 4,23% (for quality breeding ewe lambs, sheeps, rams, lambs, goats, male goats and goatlings) to 5,82% (lambs for fattening up to 300 kg).

- *Regulation on conditions and use of milk premium in 2012.* Right to use premium has the person which delivered the milk to enterprenuers active in milk processing. Premium is payed quarterly for cows, goats and sheep raw milk delivered in previous quarter. Right to use premium has the person which in previous quarter delivered at least 3,000 l of milk, and premium per litre of delivered milk is payed in amount of RSD 5.

An important component of all mentioned acts is that applicant must have registered agricultural husbandry (in Treasury), in municipality in which holder of agricultural husbandry lives. At the same time, each regulative predicts money penalties if funds are spent inappropriately.

4.2. Import of meat and meat products

Cattle breeding is the most intensive branch of agricultural production. Serbia is largely competitive regarding the production of grains and oilseeds, which are the basis for livestock production, and it also has high - quality natural pastures. However, it fails to achieve international competitiveness in this sector, primarily due to the inefficient domestic market for livestock and meat, but also due to other numerous problems related to the introduction of quality standards, then the harmonization of veterinary - sanitary regulations with international requirements etc. Meat production in Serbia has a long tradition, and some of the greatest success in agriculture are associated with meat production. However, since large export of pigs before World War II or beef export during the SFRY, much has changed in the structure and methods of production, as well as in the functioning of the market. At the same time, there was a change in distribution of producers and consumers in the world. In the following text, there is analysis of major importing countries of fresh and frozen beef, pork and poultry meat and meat products, both at the global level and at the EU level and at the level of Serbia.

When we talk about *beef*, the largest trade in the world is trade of frosen boneless meat, meat with bones and beef half sides. Italy is the largest importer of *meat with bones* with more than 30% of total world import. Large importing countries are also: France, Greece, Holland, Germany. Since these countries are also the largest exporting EU countries, it can be said that the main trade of beef with bones is done within the EU. The biggest trade of fresh meat is *trade of boneless meat* and the largest importing countries were: Japan, USA, Mexico, Germany and the United Kingdom. Analysis of trade of *frozen beef* shows that the most important is trade of meat without bones.

Also, there is an increase in trade of *frozen beef with bones*, where the largest importers are the Republic of Korea (44%), Greece, Saudi Arabia, Oman and the United Kingdom. The largest importing countries of *frozen beef half sides* are: Russia (42%), the Netherlands, Morocco, Saudi Arabia and Kuwait. Besides beef, at the market are also beef products as well as smoked and dried beef. More than 50% of *beef products* is imported by USA and the United Kingdom, followed by Canada, Germany and Japan. In the EU, all imported quantities of *beef half sides* originate from Serbia (over 70%) and Croatia (23%).

EU imports twice as much dried meat than it exports. The largest import partners are Switzerland (69%) and Brazil. Serbia is a much larger exporter than importer of beef. The unit value of imported *meat with bones* is higher than the exported value, and the only import partners are Montenegro and Macedonia. Unlike meat with bones, Serbia almost does not import *boneless meat*. Also, Serbia has a positive trade balance in the case of *dried meat*, and the only import partners are Montenegro (95%) and Bosnia and Herzegovina. The positive balance of Serbia is also in trade of *beef products*, where the largest import partners are Bosnia and Herzegovina (over 80%), Russia, Montenegro, Hungary and Ukraine.

In the world, the largest trade of meat is trade of *pork*, frozen boneless meat, frozen meat with bones and pig halves. Nearly 70% of the total trade of pig halves and meat is done within the EU, where the largest importing countries are Germany, Italy, Greece, Austria and Romania.

The world's largest importers of *fresh boneless meat* are Japan, Germany, Great Britain, France and the United States. The largest importers of *frozen boneless meat* are Japan (32%), Russia, the Republic of Korea and China. The largest importing countries of dried pork are: United Kingdom (over 50%), France and Germany. The world's largest importers of *pork products* are: Japan, United Kingdom, Hong Kong, Germany and France. The EU is a major importer of *frozen pork*, mostly from Chile, the USA, Australia, Canada and Brazil. The EU also imports dried pork, mainly from Norway, Switzerland and Brazil, as well as *pork products*, mostly from Croatia, Switzerland, Norway and the United States. Serbia is at 21st place regarding the production of pork. In recent years, Serbia increased import of *pig halves*, mostly from Macedonia and the Netherlands. At the same time, Serbia increases the import of *meat with bones* from Denmark and the Netherlands, while trade of *frozen halves* is almost non-existent. Serbia has a negative trade balance regarding *frozen boneless pork*, which is imported from Germany, Spain, Hungary, Italy and Belgium. There was a positive trade balance regarding *dry pork,* but this trend stopped. Serbia has a positive trade balance regarding *pork products*, but in recent years, import has increased gradually, from the following countries: Bosnia and Herzegovina, Croatia, Slovenia, Montenegro and Germany.

Analyzing global trade of *poultry*, dominant is participation of frozen sliced chicken meat and meat products. There is considerable trade of *live chickens* intended for further fattening. The world's largest exporter and importer of live chickens, especially one day chickens, is Netherlands. In the world there is a larger trade of *frozen chicken meat* (*primarily sliced*) than fresh meat, and the largest importers are Russia, Japan, China, Hong Kong and the United Kingdom. The largest importers of *frozen non - sliced chicken meat* are Saudi Arabia, United Arab Emirates, Yemen, Oman and Russia.

The largest importers of *fresh chicken meat* are the United Kingdom, Hong Kong, Germany, Belgium and Greece, and the largest importers of *fresh sliced chicken meat* are the United Kingdom, Germany, France, the Netherlands and Canada. Second product, by trade value, are *chicken meat products*, and the largest importers are Japan, United Kingdom, Germany, Netherlands and Canada. EU countries use significantly less chicken in their diet. In the EU, 74% of *day - old chicks* are imported from the USA, Canada, Turkey and Brazil. Most EU countries import chicken products, frozen sliced chicken meat and fresh meat import is negligible. In the EU foreign trade there is a negative balance of *chicken meat products*, mostly imported from Thailand and Brazil. Serbia is at 57th place in the world, regarding the production of chicken meat. Regarding live chickens, Serbia is trading only with *day-old chicks* where it has negative balance, and mostly imports from Hungary, Germany, Holland, France and Poland. The main characteristic of chicken meat trade, in compare to the EU, is expressed in trade of fresh chicken meat, while trade of frozen meat is insignificant.

Serbia does not import *fresh non-sliced chicken meat and import of fresh sliced poultry meat* is negligible. Serbia imports *frozen non - sliced chicken meat*, but in much smaller quantities. Import of *frozen sliced chicken meat* increases from year to year, and mostly is imported from Bosnia and Herzegovina. The trade of *processed chicken meat* showes negative balance. Import of *chicken meat products* is constantly growing, and mostly is imported from Bosnia, Slovenia, Hungary, Germany and France.

In table below (*Table 20*) it is indicated on the share of imported meat and meat products in total import of Serbia for the period 2006 - 2011 (using multiple data sources). The database of the Statistical Office of the Republic of Serbia was used to display the data regarding total import. To display the data on import of meat and meat products for the period 2006 - 2009, we used data of FAOSTAT, and for 2010 and 2011 results of Serbian Chamber of Commerce.

Table 20 - Share of imported meat and meat products in total (%)

Year	Total import[1] ($ 000)	Import of meat and meat products ($ 000)	Share of imported meat and meat products in total (%)
2006	13,172,300	16,692[2]	0.13
2007	18,553,600	25,192[2]	0.14
2008	24,330,700	47,504[2]	0.20
2009	16,055,600	43,364[2]	0.27
2010	16,734,500	42,400[3]	0.25
2011	19,861,900	56,300[3]	0.28

Source: [1] Statistical Office of Republic of Serbia, Belgrade - Serbia, [2] FAOSTAT, [3] Serbian Chamber of Commerce (for listed years); share of imported meat in author's calculation.

In period 2006 - 2008, import of meat and meat products increased by 185% (2.8 times), in 2010 it decreased by 11%, and a year later it increased by 32.8%. In 2011, compared to 2006, import of meat and meat products increased by 3.4 times. By interpretation of the data, the share of imported meat and meat products from 0.13% (2006) to 0.28% (2011) is evident. Certainly, we should try to implement measures that restrict import and promote export of meat and meat products, which would directly contribute to achieving positive trade balance.

4.3. Export of meat and meat products

Export of agro - food products from Serbia is predominantly focused on several product groups, which occupy about 2/3 of the total export of these products from Serbia. The most important are plant products: fruit and vegetables as well as cereals and cereal products, followed by sugar and sugar products, whose share in total export decreased and beverages with a relatively stable share.

The low share of products of animal origin in total export of agriculture and agro-food industry indicates the high level of extensive agriculture in Serbia i.e. the unfavorable production structure in terms of low proportion of livestock production in total agricultural production. Namely, in relation to the available agricultural resources, Serbia has a relatively undeveloped livestock production, so that, for years, allowed shipment of beef export to the EU of about 10,000 tons per year, is used marginaly. On the other hand, limits for export of pork and poultry to the EU are difficulties in meeting of strict standards set by the EU (Zekić S. at al., 2010). In the following text there is analysis of the largest countries - exporters of fresh and frosen beef, pork and chicken meat and meat products, at world level and EU level as well as at the level of the Republic of Serbia. The structure of exported *beef and meat products* is somewhat different compared to import. Previously, it is noted that the largest exporters of *beef with bones* are also the major importers: France, Netherlands and Germany. The largest exporters of *fresh boneless beef* are: Australia, Ireland,

USA, Canada and the Netherlands. The largest exporters of frozen boneless beef are: Brazil, Australia, New Zealand, India and Uruguay. The largest exporters of *frozen beef with bones* are: Australia, USA, New Zealand, Canada and Argentina.

Over 50% of *frozen beef half sides* is exported by Belarus, followed by Ukraine and by the Netherlands. The largest exporters of *dried and smoked meat* are Italy, Switzerland, Brazil, the Netherlands and Denmark. Large exporters of *beef products* are Ireland, Argentina, Germany and the United States. EU is exporter of *beef half sides*, but lack are large interannual variations and the fact that over 80% is exported to Switzerland. EU equaly exports *fresh meat with bones* and *fresh meat without bones* and the largest export partners are: Russia, Switzerland, Macedonia, Norway and Croatia. EU imports more *dried meat* than it exports and the largest export partner is Switzerland (86%). Serbia is a much larger exporter than importer of beef. It exports all kinds of meat and meat products: *meat with bones* (Italy, Montenegro, Macedonia), *boneless meat* (Montenegro and minor amounts in Macedonia), *dried meat* (Montenegro and Macedonia, and minor amounts in Albania, Russia and Germany), *beef products* (Montenegro, Macedonia, Russia, Bosnia, Albania). Generally, it can be said that Serbian export partners are the same regarding all beef products (Montenegro and Bosnia and Herzegovina).

Analyzing trade of *pork and pork products*, fresh meat is dominant, of which 55% of trade is boneless meat, 27% of trade is meat with bones and 18% of trade are pork halves. The highest level of export, regarding trade of *halves and meat with bones* has Belgium, Denmark, Germany, Spain, France, the Netherlands and Poland. The world's largest exporters of *meat without bones* are Germany, USA, Denmark, Canada and the Netherlands. The export structure of *frozen meat* is different in compare to fresh meat, and 91% is boneless meat, 6% is meat with bones and 3% are halves.

The world largest exporters of *frozen meat* are Denmark, the United States, Brazil, Canada and Germany. EU countries are the largest producers and exporters of *dried pork*, and individually Italy, the Netherlands, Denmark, Germany and Spain. The world largest exporters of *pork products* are Germany, China, Denmark, Belgium and Ireland. The EU is a major exporter of *fresh pork* and import of the same is small. It mostly exports fresh boneless pork, halves, and the least exports fresh meat with bones. *Fresh boneless pork* is exported by EU mainly to Montenegro, Croatia and Russia. EU exports *frozen meat with bones and halves*, mostly in Russia, Belarus, the Republic of Korea, Hong Kong, Croatia and Ukraine. Of all kinds of pork, EU exports mainly *frozen boneless pork*, and export partners are: Japan, Russia, the Republic of Korea, USA and Australia. Almost entire world export of *dried pork* achieve the EU, mostly in USA, Switzerland, Japan, Croatia and Russia. *Pork products* are exported by EU mainly to USA, Russia, Japan, Angola and the Republic of Korea. Analyzing the trade balance of Serbia, it can be concluded

that it mostly exports *halves*, in Montenegro and Macedonia. The only constant positive trade balance, Serbia achieved in trade of *pig meat products*, while import was negligible. The world largest exporters of chicken meat are Brazil, USA, Netherlands, France and Belgium. In the world there is a lot of trading with live chickens, especially day-old chicks. Except the Netherlands, the largest exporters and importers are USA, Great Britain, France and Germany. The world prominent trade is trade of frozen chicken meat (primarily sliced), and the largest exporters are Brazil and the United States. The largest export of non - sliced frozen chicken meat have Brazil and France. The largest exporters of fresh non-sliced chicken meat are France, China, the USA, the Netherlands and Belgium, and fresh sliced meat are the Netherlands, Belgium, Germany and the United States. Exports of meat products from year to year has increased, and the largest exporters are Thailand, China, Brazil, Germany and the Netherlands.

EU top export is export of frozen chicken meat which is increasing. There is a slow growth of chicken meat export, while the export of fresh chicken meat is constant. EU exports mainly frozen chicken meat (but it also imports large quantities) and that mostly to Russia, Hong Kong, Benin, Ukraine and Malaysia. In foreign trade of chicken meat products, the balance is negative. Import and export is in constant increase, but the import indicators are much higher than export. Trade of chicken meat in Serbia is characterized by inconstancy. Regarding *live chickens*, Serbia trades only day-old chicks where it has negative balance. Live chickens are mainly exported to Macedonia, Montenegro and Bosnia and Herzegovina, with constant increase. Export of fresh non-sliced meat is directed towards Montenegro, Macedonia and Bosnia and Herzegovina, while import is negligible.

Positive trade balance Serbia has in trade of frozen non-sliced chicken meat, and it mostly exports to Montenegro, Macedonia and Bosnia and Herzegovina, and it imports insignificant quantities. Regarding chicken meat, Serbia mostly exports fresh sliced chicken meat, and the only export partners are Montenegro, Macedonia and Bosnia and Herzegovina. The balance of foreign trade of frozen sliced chicken meat is also positive. Quantities of exported meat vary by year, and besides permanent export partners (Montenegro, Macedonia and Bosnia and Herzegovina) it also exports to Croatia and Vietnam. The negative foreign trade balance of chicken meat Serbia has regarding trade of meat products.

In the table below (*Table 21*) is presented the share of exported meat and meat products in the total export of Serbia in the period 2006 - 2011 (using multiple data sources). The database of the Statistical Office of the Republic of Serbia was used to display the data on total export. To display the data on export of meat and meat products for the period 2006 - 2009, we used data of FAOSTAT, and for 2010 and 2011 the results of Serbian Chamber of Commerce.

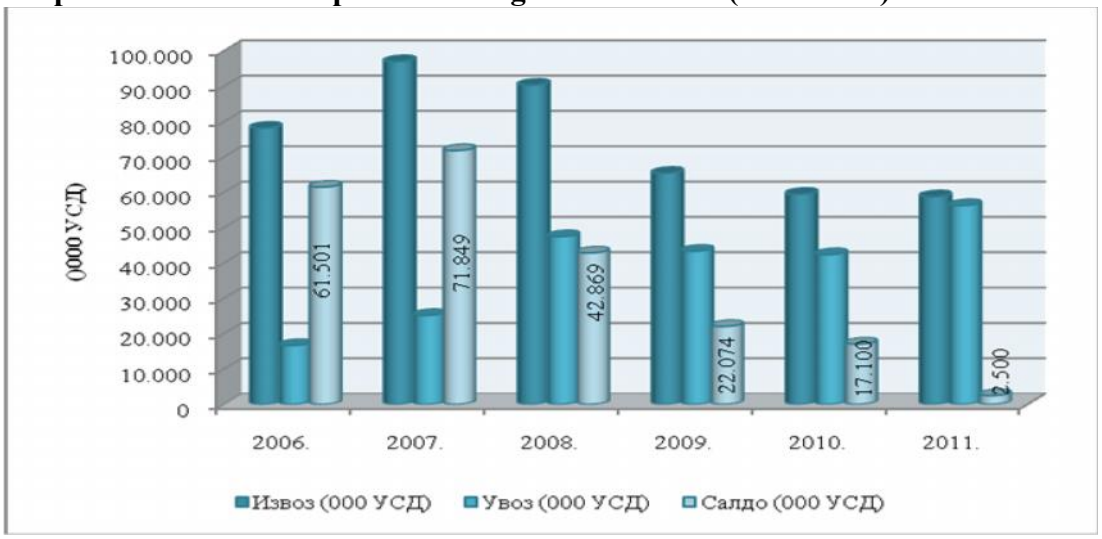
Table 21 - Share of exported meat and meat products in total (%)

Year	Total export[1] (000 $)	Export of meat and meat products (000 $)	Share of exported meat and meat products in total (%)
2006	6,427,900	78,193[2]	1.22
2007	8,824,800	97,041[2]	1.10
2008	10,973,600	90,373[2]	0.82
2009	8,344,300	65,438[2]	0.78
2010	9,794,500	59,500[3]	0.61
2011	11,779,500	58,800[3]	0.50

Source: [1] Statistical Office of Republic of Serbia, Belgrade - Serbia, [2] FAOSTAT, [3] Serbian Chamber of Commerce (for listed years); share is author's calculation.

Export of meat and meat products in 2011 declined by 24.8% compared to 2006, and compared to 2007 (maximum value of export for analyzed period) by 39.4%. By interpretation of relative indicators it can be recorded continuous decline of exported meat and meat products in total from 1.22% (2006) to 0.5% (2011). Given that the share of exported meat and meat products in total export is declining and that the value of total export vary, it is concluded that the movement of export of meat and meat products is not harmonized with the movement of total export (for example 2007/2006), i.e. participation of other products in the export structure is increasing.
Based on all mentioned, the following graph (*Graph 3*) shows meat and meat products foreign trade balance (2006 - 2011).

Graph 3 - Meat and meat products foreign trade balance (2006 - 2011)



Source: Table 2. and Table 3.
Note: in order of appearance: *Export (in USD 000), **Import (in USD 000), ***Balance (in USD 000)

Foreign trade balance of meat and meat products still has a positive value. In 2011, value has decreased by 96% (from $ 61,501,000 to $ 2,500,000). The highest trade

balance value was in 2007 ($ 71,849,000) and in 2011 value has decreased by 97%. Certainly, budgetary allocation for the livestock sector, focused on expansion of production, processing and accommodation in order to create competitive prices of livestock products and promote export, should be increased.

4.4. Strategy to promote export of meat and meat products

Due to importance of livestock production for the Republic of Serbia, it is necessary to determine all deficiencies, to analyze possibility for changes and to define the strategy followed by suitable long-term politics. Generally, there are three groups of meat producers and thus there are different production - sale chains and priorities of developmental politics. Groups of meat producers are[37]:

1. Small scale producers for own needs - they do not participate in official meat sale channels and use produced meat for own needs or small quantities of live animals or meat sell "from house". They are important for food security but extremely dangerous for food safety and spreading of diseases. More demanding standards and controls will impact this group which will have to make a decision about entering official channels which guarantee food safety or leave this sector,
2. Commodity producers - the largest part of production is within this group of producers, which mostly sell their products to registered slaughterhouses or through intermediary. Mostly, they are involved into crop production and cattle production. They are the most important group and therefore they should be the priority of agrarian politics and to them further growth should be enabled,
3. Large companies - companies which deal with feed production or meat processing and sale, which aim to establish vertical networking to reduce market and price oscillations characteristic for meat production. Certain meat production companies saw their chance in profit and mainly through privatization received production resources.

Mid - scale commodity producers although lag behind large companies, regarding technology and farm size, are the most important from the aspect of agrarian politics because they have the largest production in all sectors of meat production: beef, pork, poultry and lamb (*MPŠV, 2010*).

Strategy should define the most important priorities and their specificities, among which the most important are:

- Achievement of price competitive production,
- Forming of strong breeding organizations,
- Organizing of live animals trade,
- Obtaining export numbers for larger number of facilities and wider products assortment.

[37] Source: Ministry of agriculture, forestry and water management (2010): National program of agriculture of Serbia 2010-2013 (draft), Republic of Serbia, p. 73.

Mentioned developmental aspects are just part of long - term development strategy for lovestock production. It is necessary to enlarge market, structural and indirect state incentives in the form of subsidies, premiums and refunds, which are paid to producers for cattle production improvement. Conditions should be enabled for meat producers to return invested assets and certain percent of accumulated means to ensure continous production. Politics which give not only policies but also economic and social benefit is necessary for meat production. Considering all mentioned, it is concluded that there is a space for introduction of significant changes which will directly or indirectly stimulate meat export and create positive trade balance for meat chategories that so far had negative balance. The future meat export strategy must before all analyse developmental directions and offer solutions for improvement and expansion of animal products assortment. Possible developmental directions consider:

- Building of institutional support,
- Support of the Ministry for improvement of capacities for defining, conducting and control of the politics,
- Support of Veterinary Office to continue with marking of animals and providing conditions for export,
- Support of Republican Directorate for Commodity Reserves to form Agency for intervention purchase in EU,
- Implementation of legislative regarding live animals trade, for processing capacities and food safety system,
- Inventment support for improvement of breeding structure, breeding conditions and diet,
- Increase of investments in the cattle breeding sector to sale market surpluses into foreign market under better conditions,
- Gradual increase of meat import customs, with introduction of new export subsidies,
- Increase of investments into accomodation capacities and quality feed production, following suitable production standards,
- Improvement of genetic potential and cattle preservation because more quality breeding animals give more quality meat and meat products,
- Increase of producers awarness on the need to introduce and apply meat safety standards,
- Leaving the traditional keeping of animals and transition to EU standards.

Meat industry and export of meat products must be adjusted to new and complex business conditions at world market, especially to EU market. This considers opening of new possibilities for sectorial development and introduction of changes in so far business system for more successful and more quality business. Those changes will impact on the prosperity of agro-industrial complex but on the entire national economy. Large part in all that have legislative, which should be properly defined and which is the basis for successful functioning at the market. Implementation of the

legislative and standards is a guaranty of fair competition in this sector for the purpose of consumer's interest protection *(Sarić et al., 2010).*

4.5. Legislative

Laws which are important for the sector of livestock and agro-food industry are Law on livestock (Official Gazette of RS, no. 41/2009 and 93/2012) and Law on food safety (Official Gazette of RS, no. 41/2009). Law on livestock regulates goals of livestock production, actors in livestock production and their organization, breeding goals and breeding programs, productivity control and preservation of domestic animals characteristics, breeding of domestic animals, preservation of genetic reserves of domestic animals and agro-biodiversity in livestock breeding, production and trade of feed, trade of breeding material and other issues important for livestock production. Law on food safety regulates general conditions for food safety and feed, obligations of responsible subjects in food and feed business, system of quick inform and alert, crisis management, hygiene and food and feed quality.

In addition to these laws there are many regulations which refer to meat technology of which the most important are:

- Regulation on quality of minced meat, meat half-products and meat products (Official Gazette of RS*, 31/2012),*
- Regulation on veterinary - sanitary conditions in objects for sale of animal products outside business facilities (Official Gazette of RS, 22/94),
- Regulation on the list of genetic reserves of domestic animals, preservation method of genetic reserves as well as the list of autochthonous breeds of domestic animals and endangered autochthonous breeds (Official Gazette of RS, 14/10),
- Regulation on conditions which must be fulfilled by objects for slaughter of animals, treatment, processing and storing of animals origin products (Official Journal of SFRJ, 53/89 and Official Gazette of RS, 11/2008 and 73/2010),
- Regulation on veterinary - sanitary conditions of objects for production and trade of food of animal origin (Official Gazette of SFRJ 55/89 and SCG 56/2003, 4/2004),
- Regulation on quality of cattle meat for slaughtering, poultry and game (Official Gazette of RS 6/2003 and SCG 56/2003, 4/2004),
- Regulation on quality of slaughtered pigs and categorization of pig meat (Official Gazette of SFRJ 2/85, 12/85 and 24/86),
- Regulation on quality and other requirements for meat products (Official Gazette of SCG 33/2004 and 31/2012 - other regulation),
- Regulation on quality of meat of feathered poultry (Official Gazette of SFRJ 1/81 and 51/88).

Regarding food safety there are many regulations of which the most important are:

- Regulation on conditions, manner and method of control of quality and special characteristics of agricultural and agro-food products with indication of geographical origin (Official Gazette of RS, 73/10)
- Regulation on food hygiene conditions (Official Gazette of RS, 73/10)
- Regulation on general and special conditions of food hygiene in any phase of production, processing and trade (Official Gazette of RS, 72/10)

Main obstacle to food trade referred to standards for food safety, which are different for different countries. To export agro - food products it is necessary to satisfy certain standards such as[38]:

- HACCP - application of HACCP is common in developed economies, and in the European Union it is obligatory by Council Directive (Council Directive 93/43/EEC). Although the directive does not apply to non-member countries of the European Union, this act indirectly has a significant impact on the company which exports or planning to export to the EU. Application of the HACCP system is also a legal requirement in Serbia under the Law on Veterinary (Official Gazette no. 91/2005) and the Law on Food Safety (Official Gazette no. 41/2009).
- ISO 22000:2005 - this is international standard that refers to all organizations in the food chain and defines the requirements of food safety management system. It can be successfully applied to: food producers, food processors, retailers and delivery of food, animal feed production, manufacturers of equipment and packaging materials, manufacturers of additives, ingredients and cleaning material.
- BRC - British Retail Consortium is standard for all food manufacturers that want to introduce good manufacturing practice, and have quality production system. This standard is applicable to any manufacturing operation in which food is handled, that is from the beginning of production to the canned food process.
- KOSHER - it is the name of the certificate in the food and beverage industry to guarantee that a certain food product meets requirements set by Torah and as such it can be consumed by members of the Jewish community. Meat and meat products only of certain animal species are considered kosher.
- HALAL - in arabic it means allowed. “Allowed” refers to food that is prepared according to Sharia and majority of Muslims around the world apply this diet.
- GLOBALGAP - it is a standard that is a key reference for Good Agricultural Practice at the global market, following the demands of consumers in agricultural production.

[38] Source: http://siepa.gov.rs/sr/index/strana-tr%C5%BEi%C5%A1ta/standardi/

V ECONOMIC - FINANCIAL ASPECTS OF PRODUCTION ON LIVESTOCK FARMS IN SERBIA: CASE STUDY OF PIGS FATTENING

5.1. Short introduction of state of livestock breeding in Serbia

Agricultural production in Serbia represents one of the most important elements of the economic system, which greatly influences the creation of GDP, as well as export potential of the country. As about 75% of Republic territory can be considered rural (Jeločnik et al., 2011), particular importance of agriculture and accompanying industries on complete economic situation within the country (primarily employment and living standard of the population) can be underlined.

Without doubt it can be claimed that the level of overall development of agricultural production of some country largely depends from the share of livestock within the structure of agricultural production. According to Sarić et al. 2010, aforementioned is enhanced by fact that the consumption of meat and meat products in the world has a higher growth rate than population growth, and that this increase is more expressed in developing countries, with predictions that it will be even faster in the future.

Having in mind organization of livestock production, territory of Serbia can be generally viewed from two levels: lowland and highland regions. Lowlands dispose with fertile soil and excellent conditions for organization of mechanized, highly intensive crop production with irrigation possibility. According to Trifunović et al. 2008, within these regions can be successfully organized intensive livestock production primarily based on pig and cattle breeding (milk production). Hilly-mountainous areas occupy the largest part of the Republic, and as they are mostly under pastures and meadows can be ideal base for development of extensive livestock production, especially sheep breeding.

Unfortunately, although Serbia disposes with expressed tradition and favourable natural conditions for livestock breeding production and meat processing industry, this segment of agriculture has for years burdened with many market-economic problems. On other side, presence of decreasing trend in total number of heads, at all animal spices, endangered at least sector of pig breeding and pork meat production. This segment of livestock breeding is mostly threatened by periodical oscillations in number of heads, or by quantum of produced meat. But, flow of reduction change a structure within the breeding stock. For example, according to Ivanović et al. 2009, in 2007 in compare to 1995, although total number of pigs on the territory of Belgrade city decreased for only 4,6%, number of sows and gilts decreased for more than 36%.

Mentioned situation was primarily caused by principles of pig cycle, disturbed price parities, reduction of export market, non-custom barriers in export of fresh meat and meat

products, fall of living standard in Serbia, broken production chain in live stock breeding, inadequate functioning of financing and subsidy system, etc. (Jeločnik et al., 2012). Additionally, in conditions of global economic crisis and climate changes, producers within the pig breeding are faced with problems in fodder production, as well as with oscillations of its price on market.

During the last few years, the share of pig breeding within Serbian livestock production was around 30%, while the share of pork meat in total meat production was above 50%.

In pig breeding are involved around 400,000 family farms and agricultural enterprises, mostly located in region of Central Serbia (slightly more than 62%), while more of 80% of pigs of all categories are concentrated on family husbandries. Within the breeding structure prevails half - breeds (58%), while in the group of pure breeds usually appears Dutch Landrace (up to 34%) and in smaller percentage Big Yorkshire (3-5%), Hampshire, Duroc, Domestic meaty pig, Pietrain, other Landrace breeds (Danish, Swedish, German, Belgian, Norwegians, Finnish, Polish), etc. (Arsić et al., 2012).

According to expressed fertility potential and better production performances (average daily gain, meat/fat ratio, carcass yield, etc.) these races are of particular importance for keeping of good supply of national market with fresh meat and meat products, as well as for the secure realization of potential surplus on foreign markets. Additionally, as a measure of national genetic resources preservation, the Ministry of Agriculture subsidizes farms that breed endangered autochthonous pig breeds, such as: Mangulica, Moravka, Resavka, Šiška, Šumadinka and others.

Successful entering of domestic meat-processing industry into the foreign markets (before all in EU member states, countries within the CEFTA agreement and Custom Union - Russian Federation, Belarus and Kazakhstan) considers functioning of consolidated model of sustainable agriculture and rural development, as segment of unified strategy that will encourage systems and techniques of viable production in national agriculture. Wider use of principles of good agricultural practice require besides providing of good conditions for heads feeding, care and keeping, also a redirection of agriculturalists to local breeds, combined crop-livestock production, pro-active participation in production chain, etc.

Relying on developmental priorities within the Strategy of European Union agriculture, realization of strategic goals of sustainable agriculture and rural development in Serbia depend on achieved results through transfers of new and improvement of existing technologies and methodological procedures in this segment of economy, launching of new and preservation of quality level of actual final products and services (standardization), intensification of production and enlargement of production capacities

(arable surfaces and breeding stock), etc., previously harmonized with basic postulates of economic justification and financial profitability.

According to Njegovan et al., 2012, economic development lies primarily in technical-technological development and knowledge economy, which lead to the conclusion that only full application of acquired knowledge and its prompt transfer to complete reproduction chain in agriculture can create high-quality, safe and competitive food product.

Volume of investments for enlargement and modernization of production capacities can be from crucial importance for technological development of agriculture. According to general obsolescence of production equipment in primary agriculture and processing industry, exists justified need for investment in modernization of production cycle elements that will generate agricultural-food products competitive on national and international markets. Bogdanov, 2004, states that share of agriculture in total sum of investments in country is relatively stabile (on the level of 10%), but significantly under its importance in GDP creation. Gap is direct consequence of spending of acumulation obtained in agriculture for development of non-agricultural activities (presence of longterm neglegence of national agriculture needs from the aspect of investments).

Although by the rule live stock breeders do not have influence on selling prices of products, as their forming on the market before all depends of offer and demand, they can have impact on costs and price cost of their own products. In other words, reduction of certain segments of production costs will decrease cost price of final product, or will increase difference between achieved products' selling and cost price (it is achieving greater rate of profitability), (Vasiljević, Subić, 2010).

5.2. Material and working method

During the transition of the national agro-complex into market economy, production units within the agriculture (farms and enterprises) were adapting their business to new economic conditions. Changed economic environment has affected also to change of defined goals, from self-sufficiency to the direction of competitive market-oriented production that should meet set criteria of their own profitability.

Livestock production carries a certain dosage of complexity that imposes to farmer or management of enterprise constant decision making process directed to maintaining or increasing of achieved profit amount. Transformation of economic environment and adoption of competitive market postulates were demanded more efforts from holders of agricultural farms regarding to establishing of new organizational scheme of agricultural activities, in form of developmentally directed (commercial) farms.

Decision making process is closely connected with the possession of appropriate knowledge and skills, information, as well as suitable mechanism for identified problems solving. Efficient farm or company management considers that value of final products have to be higher than the value of total production costs. Achieved business results represent the total profit (or total loss) of certain production lines.

Methodically relatively simple process of calculation and practical application have adopted the use of analytical calculations based on variable costs in many countries with developed market economy (Vasiljević, Subić, 2010). Calculation as an analytical foundation helps to management and individual producers to manage more effectively production costs and more comfortable make business decisions.

In paper are presented calculations based on variable costs in pigs fattening. According to that it was done calculations of variable costs per one fattened head, as well as it was determined contribution margin for that line of live stock production.

Analytical calculation based on variable costs considers determination of achieved production market value (as product of market price and volume of gained products, increased for subsidies and premiums). From this value are subtracted variable costs of production, where character of variable costs in agriculture have costs of material (seed, manure and mineral fertilizers, pesticides, fodder, straw, etc.), variable costs of mechanization usage (fuel and lubricants), as well as variable part of overheads. Depending from established system of organization in certain enterprise/farm, costs of labour can be observed as fixed or variable, or they can be included or excluded during the contribution margin determination.

Result of analytical calculation based on variable costs is so called contribution margin (gross financial result or gross margin). It is defined as difference between total production value (value of main product increased for value of by - products and incentives) and proportional variable costs. It shows how much assets is left for fixed costs covering and achieving of positive financial result after variable costs coverage. Mathematically it can be expressed by next formula (Subić et al., 2010):

$$MP = VP - VT, \text{ where } VP = (q \times c) + p$$

Individually symbols represent: MP - contribution margin; VP - production value; VT - variable costs; q - quantum of product; c - product price per unit of measure; p - subsidies.

Such these calculations in agricultural production represent important advisory (control) tool that facilitates to farmers or enterprises management process of economic analysis,

or it is used for evaluation of applied technology and achieved results (based on technological and economic indicators of production).

In live stock breeding, calculation based on variable costs gives possibility for direct comparison of financial success of application of two different technological approaches at equal fixed costs, as well as comparison of two or more different intensities of same line or phase of some live stock breeding production.

Contribution margins as indicators of certain line or production phase's success can be summed in order to obtain a total contribution margin in livestock production of some agricultural enterprise or family husbandry. After deduction of total fixed costs of enterprise/farm from this value (costs of production capacity and various overheads) it will gain the total profit/loss of enterprise/farm as a whole.

At calculation based on variable costs, fixed costs are not divided to certain production lines. Of course, this calculation can be used also for obtaining of full cost price of some products after fixed costs are distributed to certain lines/phases of production.

Model of calculation in pigs fattening is expressed through two tables: contribution margin and structure of variable costs (fodder), in order to point out to live stock breeders on height of costs of certain fodders.

Initiation of production process in pigs fattening requires purchase of certain means of production, as are: piglets, fuel, fodder, veterinary services, agricultural mechanization, family labour and/or engaged labour.

In research, calculation were done based on production value and variable costs gained in pigs fattening on targeted family husbandry turned to traditional way of agricultural production (which realize products on the market), as well as on agricultural enterprises that are organized their production processes according to modern technical-technological requirements. Difference between obtained heights of contribution margin can represent potential contribution of technical-technological transfer in observed production process (pigs fattening). In livestock fattening, base for calculation is fattened head that strongly depends on period of fattening. For easier comparison of production indicator values, costs and value of production are expressed in RSD/head and official currency of EU, EUR/head.

During the paper preparation was also applied a method of sensitive analysis. By mentioned method was followed for how much is reduced the contribution margin due to decrease of yield (or reduce of selling price of product), or due to growth of variable costs

of production. On that way was determined which parameters affect the most on reduction of contribution margin or change of which parameters brings a higher risk in pigs fattening.

In evaluation of investment project effects, reduced abilities to predict possible results (incomes and costs, exploitation period, etc.) can notably affect validity of investment. According to that, during the establishment of investment decision investor is faced with complex problem related to certain dose of uncertainty, as well as in front of task how to reduce risk of potentially bad decision (Subić, 2010).

5.3. Results and discussion

Analytical calculations, based on variable costs, in of pigs fattening and sensitive analysis of contribution margin are made on the basis of data obtained from the family agricultural husbandry located on the territory of Pančevo city, as well as from farm Pionir - Besni Fok, which operates under the public enterprise PKB Corporation AD - Belgrade and pig farm that is active within the private company Čerubdžije - Surčin.

a) Public agricultural enterprise

Farm Pionir - Besni Fok, functions within the public enterprise PKB Corporation AD - Belgrade, the largest agricultural enterprise in Serbia. Production capacities of the farm are divided into few segments (production units) adjusted to milk production, as to production of piglets and pigs fattening.

Farm has on disposal production and administrative facilities, necessary manpower and mechanization, as well as arable land for the production of raw materials that are within complete fodder/feed concentrates used for feeding of all swine categories. Pig farm functions as open production system, where production segments for holding of certain categories of swine are mutually separated. Part of the farm turned to pigs fattening has the capacity of 2,000 porkers per one production cycle. The pigs are fattened to average weight of 100 kg, within 90 days production cycle, when they are delivered to slaughterhouses. During one calendar year, there are in average three cycles of fattening, so on market is usually realized about 6,000 fatlings.

Farm was established primarily to meet the needs of consumers from the territory of Belgrade city for pork meat. On the farm are grown and fattened triple half-breeds made by crossing of Big Yorkshire, Dutch Landrace and Duroc. Half-breed achieves high carcass yield (about 80%), low mortality (maximally 3%) and feed conversion of about 3 kilograms per kg of gain. Within the structure of employees farm has veterinarian, while the internal supplier of animal feed (complete mixtures) is FSH Inshra, enterprise that also operates within the PKB Corporation AD - Beograd.

Although the farm facilities were built several decades ago, they still have a relatively high level of functionality, so production deserves a good mark, not only in terms of quantity, quality, continuity, control, internal and external cooperation, but also in terms of monitoring of contemporary achievements in this line of livestock breeding (primarily in the segment of used half-breed and animal nutrition).

Picture 6. and 7. Pigs fattening on the farm Pionir

Source: Internal documentation of IAE Belgrade, Serbia

Within the structure of the calculation model in pigs fattening, variable costs are made from following elements (*Table 22*.): piglet, feed (concentrate I - for fattening phase from 25 to 60 kg, concentrate II - for fattening phase from 60 to 100 kg), veterinary services and other costs. Variable costs of production and contribution margin are presented per one fattening animal in one production cycle.

Table 22. Calculation based on variable costs in pigs fattening (farm Pionir)

Element	Quantum	UM	Price *(RSD/UM)*	Total *(RSD/head)*	Total *(EUR/head)*[39]
(I) Production value					
Porker[40]	100.00	kg	260.00	26,000.00	230.10
Subsidy[41]				1,000.00	8.80
Total				**27,000.00**	**238.90**
(II) Variable costs					
Piglet[42]	25.00	kg	300.00	7,500.00	66.40
Animal feed				8,950.00	79.20
Veterinary services and drugs				60.00	0.50
Other costs				3,580.00	31.70
Total				**20,090.00**	**177.80**
(III=I-II) Contribution margin				**6,910.00**	**61.10**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Height of cost's category other variable costs amounts about 40% of total feeding costs. As in the structure of variable costs dominates the costs of concentrate mixtures, there is a real need for their particular presentation (*Table 23*). Expressed feed costs (naturally and by their value) are related to complete period of pigs fattening (daily nutrition norm is 2.2 kg of concentrate and number of meals in one production cycle is 90), or fatling consumed in entire fattening period approximately 100 kg of both mentioned concentrate mixtures.

[39] Transfer of all values into the EUR was performed according to actual average exchange rate of National Bank of Serbia in amount 1 EUR = 113 RSD, on date 24.10.2012.,
http://www.nbs.rs/internet/cirilica/scripts/ondate.html

[40] During the week 15-22.10.2012., slaughtering price of porkers on the territory of Serbia oscillated in range of 180-250 RSD/head (http://www.stips.minpolj.gov.rs/stips/nacionalni), considering that certain breeders have prearranged redemption price of cattle with slaughter house, that can be in some moment above the actual price).

[41] According Jeločnik et al., 2012, global economic crisis affected the size of national budget and budget expenditures redirected to Ministry of agriculture. Unfortunately expressed restrictiveness of official support to agriculture in last few years was reflected through only 3.5% of total budgetary expenditures, what did not meet most of national agriculture needs.

For 2012, Ministry of Agriculture activated support measure for development of pigs breeding in Serbia, established for registered agricultural husbandries, entrepreneurs and legal entities in agriculture. According to it subsidies for fattened heads of swine agricultural producer can receive only once for the period of animal fattening (after fattening cycle), in amount of 1,000 RSD per head, for at least 10 fatlings whose average weight is above 90 kg. Subsidies could be achieved only if fattened animal involved in meat production was delivered to slaughterhouse after fattening process finished (Regulation of financial support using in pigs fattening in 2012, Official gazette of Republic of Serbia, no. 55/12).

[42] During the week 15-22.10.2012., price of piglets on cattle market, as well as at bigger breeders in Serbia oscillated in range of 200-270 RSD/head (http://www.stips.minpolj.gov.rs/stips/nacionalni), considering that price of piglets in moment of fattening process entering for observed producer was as it is presented by calculation).

Table 23. Structure of variable costs (animal feed)

Complete concentrates	Quantum	UM	Price/UM	Total RSD/head	Total EUR/head
Concentrate TOV 1	100	kg	47	4,700.00	41.60
Concentrate TOV 2	100	kg	42.5	4,250.00	37.60
Total	200	kg	-	**8,950.00**	**79.20**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

During the fattening period, depending of production age, animals were fed with complete concentrate mixture TOV 1 (fatlings in range 25 - 60 kg) and mixture TOV 2 (fatlings in range 60 - 100 kg). Mixtures are in compliance with Regulation of quality and other requests for animal feed (Official gazette of SRJ, no. 20/2000 and 38/2001, or Official gazette of RS, no. 4/2010). Within the mixture TOV 1 are proteins (min 16%), cellulose (7%), ash (8%), basic complex of vitamins (A, D3, E, B12), mineral matter (Ca, P, Na, Zn, Cu, Fe, Mn, J, Se), amino acids (Lysine, Methionine, Cystine) and other. Maximally allowed moisture is 13.5%. By composition of elements mixture TOV 2 is similar to previous one. Basic difference is in lower quantum of proteins (min 14%), higher dosage of certain vitamins, mineral matters and amino acids (in accordance with animal's age) and higher quantum of metabolic energy.

It should be noted that the costs of feed, as the supplier of concentrate mixtures FHS Inshra operates within the PKB Corporation AD, are for achieved rebate appreciably lower compared to situation when it is purchased through retail stores.

Aggravating circumstance can be eventually obsolete equipment on farm, that limits automatization of production processes and requires a lot of manual labor (especially at facilities cleaning and fatlings feeding), what affect a height of total costs in pigs fattening.

In next tables are presented fall of contribution margin in pigs fattening, due to fall of yield or fall of fatling price, as well as due to growth of variable costs.

Table 24. Contribution margin fall in pigs fattening, due to yield or price falling

Fall of yield or fall of porker's price (in %)	Fall of contribution margin in pigs fattening (in %)
5.00	18.80
10.00	37.60
15.00	56.40
20.00	75.20
25.00	94.00
30.00	-

Table 25. Contribution margin fall in pigs fattening, due to growth of variable costs

Growth of variable costs in porkers production (in %)	Fall of contribution margin in pigs fattening (in %)
5.00	14.50
10.00	29.00
15.00	43.50
20.00	58.00
25.00	72.50
30.00	87.00
35.00	-

Critical fall of yield, or critical fall of fatlings price range in interval up to 25%, but fall in interval 25% - 30% and higher will reflect negative values of contribution margin in process of pigs fattening. Also, critical growth of variable costs range in interval up to 30%, but growth in interval 30% - 35% and higher will produce negative values of contribution margin in production of fattened animals. Above presented sensitive analysis directs to conclusion that contribution margin in pigs fattening is more sensitive on price and yield fall, than to growth of variable costs.

b) Private agricultural enterprise

Observed pig farm works within the private agricultural enterprise Čerubdžije - Surčin. Production capacities of the farm are divided into segments (production units) adjusted to organization of all lines in pig breeding. Pig farm operates as a closed production system, with separate facilities for keeping of certain livestock categories. Also, the farm has on disposal room and equipment for preparation (mixing) and packaging of complete concentrate mixtures, silos, auxiliary warehouse and garage, administrative building, necessary number of full - time employees, mechanization and arable land areas for crop production.

Part of farm directed to pigs fattening has capacity of 500 porkers per one production cycle. Fattened animals in average fattening cycle of 110 days are gaining the weight of 110 kg, when they are delivering to slaughter houses. During the calendar year there are usually 2.5 production cycles, ore around 1,250 fatlings are realized on the market.

Thanks to developed entrepreneurial spirit and great efforts, management of farm succeeded to realize their products (fatlings) in many slaughter houses in Serbia from closer and wider surrounding.

Farm favors system of controlled production based on the use of modern technological solutions and implementation of product standards. Decision - makers on the farm are

decided to grow and fattened triple half-breed generated by crossing F1 generation of sows (Big Yorkshire and Swedish Landrace) and Duroc boars.

After many years of selection based on knowledge, experience and applied research employees have succeed to develop an excellent production system of breeding and fattened animals, primarily focused on healthy herds with high production performances that provide top quality meat. Used genetic material ensures production of porkers that strongly contribute to better productivity on the farm (savings in feeding, more intensive growth of the fattened animals, homogenized meat quality, lower mortality and higher number of piglets per one sow in one year, etc.). Porkers reach carcass yield of about 78% and feed conversion ratio of around 3 kilograms per one kilogram of gain. As the basic business motto of owner is health herd and prevention at all costs, mortality of heads in fattening process is on level of 1%. On the other hand, mentioned business motto and the fact that farm uses external veterinary services require little higher medical care costs (veterinary services and drugs).

As farm has all required equipment for making (mixing) and packaging of animal feed (concentrate mixture) that is used for feeding of all livestock categories, management is in position to reacts promptly on quality and better characteristics (recipe) of produced mixtures harmonized with head's needs. Indirectly, farm is in position to effect on all feed costs in production process.

Picture 8. and 9. Fatlings production on the farm Čerubdžije

Source: Internal documentation of IAE Belgrade, Serbia

The existing farm facilities are newer generation, so their high level of functionality provides significant dose of achieved production quality and comfort. Within the structure of the calculation model in pigs fattening on mentioned farm, variable costs are consisted from following elements (*Table 26*): piglet, animal feed (concentrate I - for the fattening

phase from 25 to 40 kg, concentrate II - for the fattening phase from 40 to 70 kg, concentrate III - for the fattening phase from 70 to 110 kg), veterinary services and other variable costs. Variable costs of production and contribution margin were presented per one fatling in one production cycle.

Table 26. Calculation based on variable costs in pigs fattening (farm Čerubdžije)

Element	Quantum	UM	Price *(RSD/UM)*	Total *(RSD/head)*	Total *(EUR/head)*
(I) Production value					
Fatling	110.00	kg	245.00	26,950.00	238.50
Subsidy				1,000.00	8.80
Total				**27,950.00**	**247.30**
(II) Variable costs					
Piglet	25.00	kg	230.00	5,750.00	50.90
Animal feed				10,015.00	88.60
Veterinary services and drugs				500.00	4.40
Other variable costs				4,006.00	35.40
Total				**20,271.00**	**179.30**
(III=I-II) Contribution margin				**7,679.00**	**68.00**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Category other variable costs usually are around 40% of feeding costs in porkers production. As like in case of farm Pionir, within the structure of variable costs dominate the costs of concentrated feed mixtures, so there is a need of their particular expression (*Table 27.*). Presented naturally and by value feed costs refers to complete period of one animal fattening (standard daily diet - the size meal is around 2.5 kg of concentrate, so number of served meals in one production cycle is 110). In other words, porker consumes for the entire fattening period in total about 250 kg of concentrate mixtures. In this way, on farm is achieved average daily gain (in fattening process) of slightly more than 800 gr, or daily gain of about 650 gr for the complete life cycle of one animal. Of course it has to be noted a values component of fattening cycle expressed in money (cost) for each additional feeding day (meal) outside the regular period of fattening (110 days), which may significantly burden the contribution margin in porker's production.

Table 27. Structure of variable costs (animal feed)

Complete concentrate mixture	Quantum	UM	Price/UM	Total RSD/head	Total EUR/head
Concentrate TOV 1	45	kg	44.00	1,980.00	17.50
Concentrate TOV 2	90	kg	42.00	3,780.00	33.40
Concentrate TOV 3	115	kg	37.00	4,255.00	37.70
Total	**250**	kg	**-**	**10,015.00**	**88.60**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

In compare to farm Pionir, on pigs farm Čerubdžije fattening process is fictively divided on three sub-phases, where each sub - phase is followed by adequately structured and to required needs of actual porker's production age balanced concentrate. In other words feeding within the production cycle is followed by use of next complete concentrate mixtures: TOV 1 (fattening phase 25 - 40 kg), TOV 2 (fattening phase 40 - 70 kg) and TOV 3 (fattening phase 70 - 110 kg).

By content of proteins, minerals, vitamins and amino acids, as well as by their quality animal feeds are in compliance with current Regulations on quality and other requirements for animal feed. First sub - phase of fattening lasts for 20 days, when porker consumes around 45 kg of complete concentrate mixture TOV 1. Length of next sub-phase is around 40 days when fattened animal consumes about 90 kg of mixture TOV 2. The final phase of fattening lasts for 50 days, when porker eats about 115 kg of complete concentrate TOV 3.

As at previously presented farm partially aggravating circumstance in process of fattening is lack of automatization of certain production segments (facilities cleaning and feeding).

In next tables are presented fall of contribution margin in pigs fattening, due to fall of yield or fall of fatling price, as well as due to growth of variable costs.

Table 28. Contribution margin fall in pigs fattening, due to yield or price falling

Fall of yield or fall of porker's price (in %)	Fall of contribution margin in pigs fattening (in %)
5.00	17.50
10.00	35.00
15.00	52.50
20.00	70.00
25.00	87.50
30.00	-

Table 29. Contribution margin fall in pigs fattening, due to growth of variable costs

Growth of variable costs in porkers production (in %)	Fall of contribution margin in pigs fattening (in %)
5.00	13.20
10.00	26.40
15.00	39.60
20.00	52.80
25.00	66.00
30.00	79.20
35.00	92.40
40.00	-

Critical fall of yield or critical fall of porker's price are in interval up to 25%, but fall in interval of 25% - 30% and higher will reflect negative values of contribution margin in process of pigs fattening. Also, critical growth of variable costs ranges in interval up to 35%, but growth in interval of 35% - 40% and higher will produce negative values of contribution margin in production of fattened animals on observed farm. As like in previous case, presented sensitive analysis directs to conclusion that contribution margin in pigs fattening is more sensitive on price and yield fall, than to growth of variable costs.

c) Family agricultural husbandry

Family agricultural husbandry is located in the wider territory of Pančevo city. Husbandry is developmentally oriented, or turned to production for market. Production capacities are divided into sections adjusted primarily for crop and vegetable production, and in lesser extent for pigs breeding. Production of piglets and pigs fattening are organized like a closed production system, with mutually separated facilities for keeping certain pigs categories. Inside the economic yard are arranged following facilities: room for preparation of concentrate mixtures, barn, auxiliary warehouse and garage, as well as residential facilities. All activities on the farm are carried out by family members. When it is necessary additional labor is employed (1 - 2 wage workers). Husbandry also has on disposal all necessary mechanization as well as arable areas.

As pig fattening is secondary activity on the husbandry, facilities for sows, piglets and porkers accommodation are with relatively small capacity. Farm has two sows and approximately 20 fattened animals in one production cycle. Porkers are fattened to an average weight of 120 kg, and average production cycles lasts for 130 days, when porkers are usually delivered to local butchers. During the calendar year farm organizes in average 2.5 production cycles, or on the market can be realized about 70 porkers.

By the number of porkers in one production cycle, way of breeding and feeding, present grown half-breed and strong reliance on tradition, husbandry can be considered as typical representative of fattened pigs producer in Serbia. Farm has sows, F1 generation of half-breed, made by crossing of Domestic meaty pig and Dutch Landrace, which are usually mate to Duroc boars from the farms in the surrounding villages.

Pictures 10. and 11. Traditional fatling production on the family agricultural husbandry

Source: Internal documentation of IAE Belgrade, Serbia

Considering that husbandry produce piglets as fattened material independently, it is important to note that in average one sow raises about 10 piglets, so situations that the piglets for fattening are bought at the local cattle market are really rare. Although husbandry does not have any certificate of production process standardization, family members make a great effort to maintain the health of animals at a high level, as well as to maximally use genetic potential of porkers. Carcass yield of half-breeds is slightly above 75%, and feed conversion is less than 3.5 kilogram per kg of gain. Mortality in fattening process is relatively low. Husbandry uses externally services of local veterinary.

Should be reconsidered the fact that husbandries in Serbia in many cases feeding of porkers based on swills, in other words food that is not eaten by members of observed or surrounding husbandries (left - overs). By applying of this method of feeding, feed conversion rise to 5 or more kilogram per kg of gain, as well as meals are usually not balanced properly (nutritionally and energetic).

Husbandry is in situation to prepare by traditional recipe animal feed that is used in porker production. Feed is consisted of corn groats (70%), triticale (20%), as well as soybean meal and super concentrate (5% each). Some elements of mixture (corn and triticale) are produced on husbandry, while other are obtained externally. During the realization of fattening process for 130 days porker eats about 325 kg of aforementioned mixture (average size of meal is 2.5 kg), but daily size of meal increases with the end of fattening process.

Existing facilities were built three decade ago, but they are still very functional. All activities related to piglets production and pigs fattening are done manually.

Structure of variable costs in process of fattening is consisted of next elements (*Table 30*): piglet, animal feed, veterinary services and other variable costs. Variable costs and contribution margin are presented per fattened animal for one production cycle.

Table 30. Calculation based on variable costs in pigs fattening (agricultural husbandry)

Element	Quantum	UM	Price *(RSD/UM)*	Total *(RSD/head)*	Total *(EUR/head)*
(I) Production value					
Porker	120.00	kg	230.00	27,600.00	244.20
Subsidy				1,000.00	8.80
Total				**28,600.00**	**253.00**
(II) Variable costs					
Piglet	25.00	kg	260.00	6,500.00	57.50
Animal feed				12,147.00	107.50
Veterinary services and drugs				250.00	2.20
Other variable costs				3,644.00	32.20
Total				**22,541.00**	**199.40**
(III=I-II) Contribution margin				**6,059.00**	**53.60**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

Category of other variable costs is mostly around 30% of costs of animal feed. As like in previous calculation, within the structure of variable costs dominates costs of feeding, so there is a need for their separate presentation (*Table 31*).

Table 31. Structure of variable costs (animal feed)

Complete concentrate mixture	Quantum	UM	Price/UM	Total RSD/head	Total EUR/head
Corn groats	228	kg	32	7,296.00	64.60
Triticale	65	kg	35	2,275.00	20.10
Soybean meal	16	kg	65	1,040.00	9.20
Super-concentrate	16	kg	96	1,536.00	13.60
Total	**325**	kg	**-**	**12,147.00**	**107.50**

Source: Subić, J., Jeločnik, M. (2012): Marža pokrića u poljoprivrednoj proizvodnji (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.

In next tables are presented fall of contribution margin in pigs fattening, due to fall of yield or fall of fatling price, as well as due to growth of variable costs.

Table 32. Contribution margin fall in pigs fattening, due to yield or price falling

Fall of yield or fall of porker's price (in %)	Fall of contribution margin in pigs fattening (in %)
5,00	22,80
10,00	45,60
15,00	68,40
20,00	91,20
25,00	-

Table 33. Contribution margin fall in pigs fattening, due to growth of variable costs

Growth of variable costs in porkers production (in %)	Fall of contribution margin in pigs fattening (in %)
5.00	18.60
10.00	37.20
15.00	55.80
20.00	74.40
25.00	93.00
30.00	-

Critical fall of yield or critical fall of porker's price is in interval up to 20%, but fall in interval of 20% - 25% and higher will reflect negative values of contribution margin in process of pigs fattening on husbandry. Also, critical growth of variable costs ranges in interval up to 25%, but growth in interval of 25% - 30% and higher will produce negative values of contribution margin in production of fattened animals. Above presented sensitive analysis directs to conclusion that contribution margin in pigs fattening on husbandries is also more sensitive on price and yield fall, than to growth of variable costs. Besides that, among all three cases, the contribution margin on husbandry is subject to the most intensive changes with changing of certain parameters.

5.4. Conclusion

It is undisputed that Serbia has favorable natural conditions for the development of livestock breeding and related industries, as well as strong tradition within the segment of pigs breeding. Unfortunately mentioned segment of the livestock breeding is like whole sector for years burdened with many market-economic problems, which caused the downward trend of the total number of cattle heads, as well as production of meat and meat products. Problem is even more complicated with the changes in the structure of basic herd in pig breeding (usually at the expense of sows and gilts).

The basic idea of the research was creation of calculations based on the variable costs generated in pigs fattening on the family husbandry turned to tradition in agricultural production (as they dominate in the structure of production units engaged in agriculture), but which realized its products in the market, as well as in agricultural enterprises (public and private) that are largely adjusted their production processes with the modern technical-technological requirements in pig breeding. From gained contribution margins are covered fixed costs of observed production units, and rest represents profit hat is realized in mentioned line of livestock production.

Such calculations can be significant analytical tool that will help to companies' management and husbandries' owners in economic analysis of production units they manage. Also, they can serve as a base for testing of already accepted production

technology and achieved results. Mutual differences between gained contribution margins in described production units can represent potential contribution of technical-technological transfer in realization of observed production process (pigs fattening).

Summarizing the results obtained by the variable costs calculation in porker's production in agricultural enterprises and on family husbandry in Serbia next can be concluded:

- All observed production subjects have been achieving positive contribution margin in fatlings production,
- Within the structure of variable costs in all three cases dominates costs of animal feed (this costs on family husbandry are even higher than 54%, while on the farm Pionir that operates as a segment of public agricultural enterprise they are at the level of 44%),
- The highest value of contribution margin in pigs fattening is achieved on the private agricultural enterprise Čerubdžije and the lowest at the family husbandry,
- At all observed production units contribution margin is more sensitive on fall of yield or fall of price, than on growth of variable costs,
- The riskiest organization of pigs fattening is on family agricultural husbandry, what is mostly a consequence of consistent leaning on tradition, as well as limited presence of contemporary technical-technological solutions.

PREZENTATION OF SWOT ANALYSIS AS AN ANALYTICAL INSTRUMENT FOR ASSESMENT OF STRATEGIC POSITION OF THE COMPANY THROUGH CASE STUDY IN THE MEAT PROCESSING SECTOR

PRACTICAL EXAMPLE OF SWOT ANALYSIS FOR MEAT-PROCESSING SECTOR - ABBATOIR, MEAT PROCESSING AND TR. "KOSANOVIĆ"

SWOT analysis		
	Strengths	**Weaknesses**
Internal factors	Traditional production and application of concept *from farm to fork* in business The existence of repro-centre, its own raw material base for the production and veterinary services Innovative and flexible production facilities adaptable to changing market requirements and expectations The existence of technological processing system which takes account of environmental protection (*waste water filter)* Differentiation of the product line (*wide range of products)* Developed brands *„Sremska lukanika"* - included in the Master Plan of Fruska Gora (2012-2022) and *„Jetrena pašteta"* - with the mark *„health food -green apple"* Educated and highly trained labor, and teamwork Implemented HACCP system and standards ISO 9001:2000, ISO 22000	Periodicity of the business, short period of existence and lack of market position Unfinished plant for production of durable meat products Lack of adequate financial support for strategy-oriented development projects Lack of marketing activities to promote products Underdevelopment of distribution channels Lack of competition in the market and uncertain product placement
	Chances	**Threats**
External factors	Very good geographic location of the company and developed transport infrastructure (*road, rail and air transportation*) Development of local and regional markets, competitiveness and export license for non-EU countries The expected increase of living standard, meat consumption per capita and demand for more quality products in the future The adoption of new laws that favor the production of safe food The continuity in creating brand value of the company The promotion of rural tourism through the construction of ethno-farm and placement of products produced in the traditional way	Economic instability in the market fueled by global economic crisis Decline in the standard of living and low purchasing power Unfair competition and monopoly retailers Large price disparities Undefined development strategy of meat processing sector of industry The rapid pace of business that requires continuous updating and upgrading the system to better market performance and features to compete with the competition

Source: http://www.klanicakosanovic.com/, http://www.mikosanovic.rs/

Thus, the essence of *SWOT analysis* is to determine whether the company is capable to improve the operations on the market and to survive in different environmental conditions. *From the SWOT matrix, one gets the conclusion that the analyzed company owns certain forces that make it very competitive in today's business environment. Also, there are many chances on the market and the company with its clearly defined and measurable goals, of course, is directed to use them in a significant extent. However, except of work on the elimination of weaknesses in the company, the company management must, in every stage of development, constantly pays attention to the threats from the market, to make strategic and operational plans to make them successful and program innovative budgeting as a tool of intervention*.

In modern business, from all above mentioned reasons, *strategic framework*is identified as a basic idea, which combines functional areas of the company as a whole and linking its activities with the challenges of the external environment, to link at the best possible way chances and threats of the company with strong and weak sides of the company. Accordingly, formation of the *strategy* must be intelligent pursuit for planned action, which will develop and increase the competitive advantage. *Practically*, *the strategy is the key link which makes it possible to achieve the mission and goals, and therefore the vision of company*.

Having in mind the appropriate parameters and a degree of economic development in the beginning of the operating period (2006, 2007, 2008) of the observed company - abattoir, meat processing and tr. "KOSANOVIĆ", a strategy that was totally acceptable and feasible was the strategy of market penetration. Given the current position of the company (2011), a clear vision and a plan to maintain and enhance a strong brand, strategy of diversification was applied in order to achieve a competitive advantage on the market. Such approach enables leadership in expenses and differentiation from the competition, sale of new product on the market, increase the relative market share and market growth rate.

LITERATURE

1. *Agrar u 2011. sa predviđanjima za 2012. godinu - procene, ocene i predlozi*, Privredna komora Srbije, Udruženje za poljoprivredu, prehrambenu i duvansku industriju i vodoprivredu, Beograd, februar 2012.
2. Andić, M., Đerković, Z., Vasiljević, Z. (1995): *Neki aspekti donošenja poslovnih odluka kod preduzeća iz agrobiznisa*, u monografiji - Strategija razvoja preduzeća u tržišnoj privredi, Ekonomski fakultet Beograd, Srbija.
3. Andrić, J. (1998): *Costs and calculations in agricultural production* - II edition, Savremena administracija, Belgrade, Serbia.
4. Andrić, J., Vasiljević, Z., Sredojević, Z. (2005): *Investicije - osnove planiranja i analize*, Poljoprivredni fakultet, Beograd, Srbija.
5. Arsić, S., Kljajić, N., Vuković, P. (2012): *Cattle stock and the analysis of total meat production in the Republic of Serbia*, Economics of Agriculture, vol. 59, no. 1/2012, IAE, Belgrade, Serbia, p. 99-114.
6. *Autohtoni proizvodi od mesa u Srbiji*, authors: Dr Dragan Vasilev, Dr Ilija Vuković, Presentation from lecture conducted on February 2012 in Belgrade, within promotion event organized at TECH.FOOD Project.
7. Baza podataka Republičkog zavoda za statistiku Srbije, vrednost uvoza i izvoza, ukupno, po mesecima 2006 - 2011, pristupano 09.08.2012, (http://webrzs.stat.gov.rs/axd/index.php).
8. Blaženka Popović, Radojka Maletić, Svjetlana Janković Šoja (2010). *Stočarska proizvodnja Republike Srbije - karakteristike i tendencije*. Prvi naučni simpozijum agronoma sa međunarodnim učešćem - Agrosym 2010, Jahorina.
9. Bogdanov, N. (2004): *Poljoprivreda u međunarodnim integracijama i položaj Srbije*, Monografija, DAEJ, Beograd, Srbija.
10. Boje, D., M., Winsor, R., D. (1993): *The Resurrection of Taylorism; Total Quality Management's Hidden Agenda*, Journal of Organizational Change Management. 6, no. 4, pp. 57 - 70.
11. Ćejvanović, F., Cvijanović, D., Grgić, Z., Hodžić, K., Subić, J. (2010): *Cost and calculation theory in agriculture* - addition - Catalogue of agricultural calculations, monograph, IAE Belgrade, Serbia.
12. Cicea, C., Subić, J., Cvijanović, D. (2008): *Beyond Agriculture and Rural Development: Investments, Efficiency, Econometrics*, monograph, Institute of Agricultural Economics Belgrade, Serbia.
13. Cvijanović, D., Paraušić, V., Jeločnik, M. (2011): *Exchange of meat, meat products and milk between the customs union - Russian Federation, Belarus and Kazakhstan and Republic of Serbia*, Proceedings, I International scientific conference - Actual problems of international economic development in the conditions of globalization, State Agrarian University Stavropol, Stavropol, Alfa-print 2011, p. 4 - 9.
14. *Društveno odgovorno poslovanje u Srbiji*, Stratedžik Marketing, januar - jun, 2005, Beograd.

15. Đuričin, D. (2006): „*Tranzicija, stabilizacija i održivi razvoj: Perspektiva Srbije*“, Uvodni referat, Miločerski ekonomski forum 2006: Evropski prioriteti i regionalna saradnja, Savez ekonomista Srbije, Miločer.
16. FAOSTAT baza podataka o uvoznim i izvoznim vrednostima mesa i mesnih prerađevina u Srbiji (2006 - 2009), pristupano 06.08.2012, (http://faostat.fao.org/site/535/DesktopDefault.aspx?PageID=535#ancor).
17. *Gastronomska mapa Srbije*, Rezultati istraživanja odeljenja za zaštitu prirodne i kulturne baštine, Zavod za proučavanje kulturnog razvitka Republike Srbije, januar 2010.
18. Ivanović, L., Jeločnik, M., Bekić, B. (2009): *Possibilities for increment of live stock breeding competitiveness on the territory of Belgrade city*, Proceedings, 113th Seminar of the EAAE - The role of knowledge, innovation and human capital in multifunctional agriculture and territorial rural development, IAE Belgrade, Serbia p. 191-200.
19. Ivanović, S., Subić, J., Sredojević, Z. (2007): *Financing of family farms in Serbia and its influence on business results*. Proceedings, Conference - Values and challenges in designing the European rural structures - research network experience, IAE, ERDN, vol. 5, Bucharest, Romania.
20. Jeločnik, M., Bekić, B., Subić J. (2012): *Aspects of development of Serbian agriculture in the context of the global economic crisis*, Scientific Papers Series “Management, Economic Engineering in Agriculture and Rural Development“, vol. 12, issue 1, University of Agricultural Sciences and Veterinary Medicine Bucharest, Romania, p. 91 - 96.
21. Jeločnik, M., Ivanović, L., Subić, J. (2011): *How strong is Serbian agriculture - Comparative analysis of several agricultural indicators of Serbia and Romania*, Chapter 14, in monograph - Serbia and the European Union: Economic lessons from the new member states, FEUC, Coimbra, Portugal, p. 214 - 233.
22. Jobber, D. (1995): *Principles and Practice of Marketing*, McGraw - Hill Book Company, London.
23. Kubr, M. (1995): *Kako odabrati i koristiti konsultante: Vodič za klijente*, (Prevod), Ekonomski institut, Beograd.
24. *Kulen od mesa svinja rase mangulica i moravka*, authors: dr Milica Petrović, mr Čedomir Radović, Nenad Parunović dipl.vet., mr Milan Mijatović, dr Dragan Radojković, Nikola Stanišić dipl.inž., Biotechnology in Animal Husbandry 26 (spec.issue), p 81 - 94, 2010 ISSN 1450 - 9156 Publisher: Institute for Animal Husbandry, Belgrade - Zemun.
25. Lindgren M., Bandhold H. (2003): *Scenario Planning: The link between future and strategy*, Palgrave Macmillan, New York, USA, pp. 14.
26. Mihailović, B. (2011): *Razvoj konsultantskih usluga u Srbiji i njihov uticaj na performanse preduzeća u agrokompleksu*, monografija, Institut za ekonomiku poljoprivrede Beograd.
27. Ministarstvo finansija (2012): *Bilten javnih finansija br. 89 za januar 2012*., objavljeno mart 2012., Beograd, Republika Srbija , str. 55.

28. Ministarstvo poljoprivrede, šumarstva i poljoprivrede (2009). *Bilans proizvodnje, tržište i prerada*. Oblast: govedarstvo, (http://www.mpt.gov.rs/postavljen/137/govedarstvo-novembar%20izvestaj.pdf).
29. Ministarstvo poljoprivrede, šumarstva i vodoprivrede (2010): *Nacionalni program poljoprivrede Srbije 2010-2013*., Republika Srbija, str. 50.
30. *Nacionalni program ruralnog razvoja Republike Srbije od 2011 - 2013*, Službeni glasnik br. 15/2011.
31. Njegovan, Z., Jeločnik, M., Potrebić, V. (2012): *Agricultural knowledge development - investing in people (human capital),* Scientific Papers - Agrarian economy and rural development - realities and perspectives for Romania, vol. 3, issue 2012, ICEADR, Bucharest, Romania, p. 258 - 265.
32. *Očuvanje genetičkih resursa autohtonih rasa domaćih životinja u Srbiji*, Drobnjak, D., Urošević, M., Matarugić, D., Zbornik sažetaka, I međunarodni simpozijum i XVII naučno - stručno savetovanje agronoma Republike Srpske, Trebinje - Bosna i Hercegovina, 19 - 22 mart 2012., (http://www.cepib.org.rs/wp-content/uploads/2012/05/Geneticki_resursi.pdf).
33. Paraušić, V., Cvijanović, D., Hamović, V. (2010): *Klasterski pristup unapređenju konkurentnosti stočarske proizvodnje u Republici Srbiji*, Zbornik Matice srpske za društvene nauke, br. 130.
34. Paraušić, V., Hamović, V., Arsenijević, Ž. (2008): *Udruženja poljoprivrednika u funkciji konkurentnosti domaće poljoprivrede,* International Scientific Meeting: "Multifunctional Agriculture and Rural Development III - rural development and (un)limited resources", 4 - 5th December 2008.
35. Paraušić, V., Hamović, V., Cvijanović, D. (2010): *Analiza stanja i mogući pravci razvoji zemljoradničkih zadruga na području grada Beograda,* Tematski zbornik „Agrarna i ruralna politika u Srbiji: Održivost agroprivrede, zadrugarstva i ruralnih područja (3)", Društvo agrarnih ekonomista Srbije, Poljoprivredni fakultet, Zemun.
36. Pejanović, R., Popov - Raljić, J., Papić, T. (2006): *Kvalitet hrane kao factor konkurentnosti*, Savremena poljoprivreda, 2006, vol. 55, br. 1 - 2, str. 1 - 7.
37. Pejanović, R., Tica, N. (2004): *Kvalitet kao factor konkurentnosti agro(privrede) SCG*, Ekonomist, 2004, vol. 57, br. 1, str. 202 - 207.
38. Porter, E., M. (2008): *O konkurenciji*, FEFA, Beograd.
39. Porter, M. (1998): *Clusters and the New Economics of Competition*, Harvard Business Review, November - December 1998.
40. Presna, M., B., Branković, A., Savčić, R. (2006): *Sveže voće i povrće 2006*: *Konkurentnost privrede Srbije*, Jefferson institut, Beograd, pristupano 02.08.2012.
41. Privredna komora Srbije, *Podaci o uvoznim i izvoznim vrednostima mesa i mesnih prerađevina u Srbiji (2010 - 2011),* (http://www.pks.rs/PrivredaSrbije.aspx?id=13&p=2&, pristupano 31.07.2012).
42. *Program za razvoj poslovnih inkubatora i klastera u Republici Srbiji 2007 - 2010*, Republika Srbija, Ministarstvo privrede.
43. Popović, R., Knežević, M., Štavljanin, B. (2010): *Razvoj tržišta osnovnih stočarskih proizvoda u Srbiji u kontekstu Evropskih integracija,* Tematski zbornik -

Agroprivreda Srbije i evropske integracije - (ne)prilagođenost obostranoj primeni Prelaznog trgovinskog sporazuma. Organizator: Društvo agrarnih ekonomista Srbije, str. 103 - 114.
44. Rakita, B. (2001): *Međunarodni marketing*, Ekonomski fakultet, Beograd.
45. Republički zavod za statistiku, Republika Srbija, Statistički godišnjak Srbije, 2002 - 2011., Beograd.
46. Sarić, R. (2010): *Kvalitativni analitički instrumenti*, II educational training presentation within international Project TECH. FOOD, Klub međunarodnog pres centra (28.10.2010.), Belgrade.
47. Sarić R. (2011): *Upravljanje rizikom u savremenom poslovnom okruženju - Inovativna ekonomija*, III educational training presentation within international Project TECH. FOOD, Klub međunarodnog pres centra (25.02.2011.), Belgrade.
48. Sarić, R., Roljević, S., Bekić, B. (2010): *Trends and developmental possibilities of meat industry*, Economics of Agriculture, SI - 2, vol. LVII, IAE Belgrade, Serbia, p. 280 - 287.
49. Sarić, R., Roljević, S., Bekić, B. (2010): *Trends and developmental possibilities of meat industry*, Ecomomics of Agriculture, Book I, special issue - 2, International Scientific Meeting: Multifuctional agriculture and rural development (V) - regional specificities, Institute of Agricultural Economics, Belgrade, Serbia, pp. 280 - 287.
50. *Satelitski računi zadružnog sektora Srbije u periodu 2007 - 2009*, Republički zavod za statistiku Republike Srbije, 2011.
51. Jovanović, S., Savić, M., Trailović, R. (2010): *Organska proizvodnja u stočarstvu*. Priprema edukatora za unapređenje obrazovanja proizvođača i ostalih subjekata u lancu proizvodnje hrane životinjskog porekla. Centar za unapređenje obrazovanja u veterinarskoj medicine Beograd.
52. Službeni list SCG, br. 33/2004. Pravilnik o kvalitetu i drugim zahtevima za proizvode od mesa.
53. Službeni list SRJ, br. 20/2000 i 38/2001 i Službeni glasnik RS, br. 4/2010 - dr. pravilnici. Pravilnik o kvalitetu i drugim zahtevima za hranu za životinje.
54. Stanković, V. (2011): *Poljoprivreda Srbije - Između mogućnosti i izazova*, prezentacija, Regionalna konferencija posvećena poljoprivredi Agribiz 2011 - Grow your business, Beograd, Srbija.
55. Subić, J. (2010): *Specifičnosti procesa investiranja u poljoprivredi*, monografija, Institut za ekonomiku poljoprivrede Beograd, Srbija.
56. Subić, J., Ivanović, L., Jeločnik, M. (2009): *Contribution margin in agricultural production* (field research), IAE, Belgrade, Serbia.
57. Subić, J., Ivanović, L., Jeločnik, M. (2010): *Sensitive analysis of livestock breeding production on family farms*, Economics of Agriculture, Vol. LVII, SI - 2, IAE Belgrade, Serbia, p. 312 - 320.
58. Subić, J., Ivanović, L., Jeločnik, M. (2010): *Sensitive analysis of livestock breeding production on family farms*, Economics of Agriculture, Vol. LVII, SI - 2, IAE, Belgrade, Serbia, p. 312 - 320.

59. Subić, J., Jeločnik, M. (2012): *Marža pokrića u poljoprivrednoj proizvodnji* (terenska istraživanja), Institut za ekonomiku poljoprivrede, Beograd, Srbija.
60. Subić, J., Jeločnik, M., Ivanović, L. (2010): *Risk analysis in live stock breeding production by using of sensitive analysis*, Proceedings - II International scientific conference - Modern problems of national economic development, SSGAU, Stavropol, Russian Federation, p. 45 - 54.
61. Subić, J., Jeločnik, M., Ivanović, L. (2010): *Risk analysis in live stock breeding production by using of sensitive analysis,* Proceedings - II International scientific conference - Modern problems of national economic development, SSGAU, Stavropol, Russian Federation, p. 45 - 54.
62. *Survey of the European Management Consultancy Market*, The European Federation of Management Consultancies Associations - FEACO, 2004.
63. *Tradicionalni proizvodi od mesa sa područja Srema*, autor: Panjković, Z. - Presentation from lecture conducted on February 2012. in Belgrade, within promotion event organized on project TECH.FOOD.
64. Trifunović, G., Mekić, C., Đedović, R., Dragić, Ž., Jelić, S. (2008): *Transitional processes in livestock-breeding in Serbia*, Proceedings, International symposium - Dezvoltarea economica performata si complexa a spatiului rural si region, ASE, Bucurest, Romania, p. 46 - 51.
65. *Uputstvo za sprovođenje mere podrške razvoju inovativnih klastera u 2011*. godini, Ministarstvo ekonomije i regionalnog razvoja Republike Srbije.
66. Uredbe i podsticaji u oblasti stočarstva u 2012., (http://www.uap.gov.rs/),
67. Vasiljević, Z., Subić, J. (2010): *Costs managing in Serbian agro - economy - factor of competitiveness growth*, Proceedings from the conference - Serbian agro-economy and European integrations - (un)conformity to mutual appliance of interim trade agreement, AAES, Belgrade, Serbia, p. 77 - 94.
68. Vasiljević, Z., Subić, J. (2010): *Costs managing in Serbian agro-economy - factor of competitiveness growth,* Proceedings from the conference - Serbian agro - economy and European integrations - (un)conformity to mutual appliance of interim trade agreement, AAES, Belgrade, Serbia, p. 77 - 94.
69. Vasiljević, Z., Subić, J. (2010): *Importance of the costs calculation at the family farms in Serbia*, Chapter V, International monograph - Agriculture in late transition - Experience of Serbia, AAES, Belgrade, Serbia, p. 123 - 138.
70. Vasiljević, Z., Subić, J. (2010): *Importance of the costs calculation at the family farms in Serbia*, Chapter V, International monograph - Agriculture in late transition - Experience of Serbia, AAES, Belgrade, Serbia, p. 123 - 138.
71. *Vodič za primenu Zakona o udruženjima*, Ministarstvo za državnu upravu i lokalnu samoupravu, Građanske inicijative, Britanska ambasada u Beogradu, Misija OEBS-a u Srbiji, Beograd, oktobar 2009.
72. *Zakon o udruženima*, Službeni glasnik RS, br. 51/09.
73. *Zakon o zadrugama*, Službeni list SRJ 41/96, Službeni list SRJ 12/98, Službeni glasnik RS br. 34/06.

74. Zekić, S., Tošin, M., Kresoja M. (2010): *Spoljnotrgovinska razmena poljoprivredno - prehrambenih proizvoda Srbije*, Tematski zbornik Agroprivreda Srbije i Evropske integracije - (ne) prilagođenost obostranoj primeni prelaznog trgovinskog sporazuma, Društvo agrarnih ekonomista Srbije, Beograd, str. 95-102. (http://www.scribd.com/doc/76458875/%D0%A1%D0%9F%D0%9E%D0%89%D0%9D%D0%9E%D0%A2%D0%A0%D0%93%D0%9E%D0%92%D0%98%D0%9D%D0%A1%D0%9A%D0%90-%D0%A0%D0%90%D0%97%D0%9C%D0%95%D0%9DA, http://portal.zzbaco.com/mojo_baco/Data/Sites/1/docs/EvropInt/00.pdf, pristupano 09.08.2012).
75. Živanović, N. (1994): *Strukturiranje poželjne konsalting pomoći preduzećima u krizi*, Poslovna politika, jun, str. 30 - 40.
76. Živkov, G., Obućina, B., Bardić, D., Dulić Marković, I., Bernardoni, P. (2010): *Efekti liberalizacije carina na poljoprivredu Republike Srbije*, SEEDEV, Beograd, Srbija, str. 110 - 133.
77. http://siepa.gov.rs/sr/index/strana-tr%C5%BEi%C5%A1ta/standardi/, pristupano 03.11.2012.
78. http://www.bioserbia.info/fileadmin/templates/bioserbia_info/gallery/2009_02_19_brosura/STANJE%20I%20PERSPEKTIVE%20ORGANSKOG%20STOCARSTVA%20U%20SRBIJI.pdf., pristupano 11.09.2012.
79. http://www.blic.rs/Vesti/Ekonomija/337847/U-julu-budzetski-suficit-od-pet-milijardi-dinara, pristupano 14.08.2012.
80. http://www.ctt.salford.ac.uk/our-process.
81. http://www.klanicakosanovic.com/
82. http://www.kulen-backi-petrovac.ls.rs/rs.
83. http://www.moba.co.rs/udruzenja/upmoba.htm.
84. http://www.tehnologijahrane.com/pravilnici
85. http://www.zis.gov.rs
86. www.kompass.co.yu (pristupano 11. 2011)
87. www.pkb-sr.com/pkb.pdf.
88. www.pkb-sr.com/pkb.pdf.

REVIEW I

Title of the monograph:

"SOLUTIONS AND INTERVENTIONS FOR THE TECHNOLOGICAL TRANSFER AND THE INNOVATION OF THE AGRO-FOOD SECTOR IN SOUTH EAST REGIONS - PROJECT TECH.FOOD"

Publisher:

Institute of Agricultural Economics, Belgrade, Serbia

Authors:

PhD Drago Cvijanović, PhD Jonel Subić, PhD Vesna Paraušić, PhD Branko Mihailović, Mr Ljiljana Rajnović, M.A. Marko Jeločnik, B.Sc. Bojana Bekić, M.A. Radojica Sarić, B.Sc. Biljana Grujić, B.Sc. Marijana Jovanović;

Institute of Agricultural Economics, Belgrade

This monography, under title „Solutions and interventions for the technological transfer and the innovation of the agro-food sector in south east regions - TECH.FOOD Project", is a result of research work at the TECH.FOOD Project, and by chapters structure it represents an original analysis of current situation in the sector of meat processing industry in Serbia. Monograph emphasizes the advantages of innovation, which in modern business environment enables risk reduction with improvement of market factors competitiveness. Also, various cooperation models (associations, cooperatives, clusters) of market subjects in agrocomplex in the Republic of Serbia were determined, and they can influence on the reduction of limitations which exist in agriculture and agro-food production of Serbia. It was emphasized the importance of marketing use, as a factor of enterprises development in the meat-processing sector, with accent on development of menagerial skills using consulting, which enabels products positioning at domestic and international market.

In third chapter of the monography, authors present current state in livestock breeding, which in the past ten years, had linear decline due to constantly low subsidies for this agricultural activity. Low support from agrarian budget, low prices of raw milk, large oscillations of prices of live animals and meat and problems regarding uncertain and unorganized purchase channals led to decrease of cattle production at the entire terittory of Serbia.

In fourth chapter is given overwiev of legislative regarding meat production and ways to stimulate export. It is emphasized that budget assets are allocated for development of agriculture in small percent, in compare to total budget of the Republic of Serbia. Import of meat and meat products in period 2002 - 2011 is characterized by constant

increase while export of domestic meat and meat products is in constant decline. Fifth chapter gave economic-financial aspects of the production at cattle farms in Serbia.

From previosly said it can be concluded that this monography represents quality scientific contribution to development of meat-processing industry in the Republic of Serbia and that it can be served as guide through current situation at the market, providing quality methods and tools for production innovation.

In Belgrade,
02.11.2012

Reviewer:
Raluca Anreea ION
Assistant Professor, PhD
Faculty of Agro-food and Environmental Economics
Bucharest Academy of Economic Studies, Romania

REVIEW II

Monograph title:

"SOLUTIONS AND INTERVENTIONS FOR THE TECHNOLOGICAL TRANSFER AND THE INNOVATION OF THE AGRO - FOOD SECTOR IN SOUTH - EAST REGIONS - TECH.FOOD PROJECT"

Publisher:
Institute of Agricultural Economics, Belgrade

Authors:

Prof. dr Drago Cvijanović, Doc. dr Jonel Subić, Mr Ljiljana Rainović,
Dr Vesna Paraušić, Dr Branko Mihailović,
MSc Marko Jeločnik, dipl.biol. Bojana Bekić,
MSc Radojica Sarić, dipl.ing. Marijana Jovanović, dipl.ing. Biljana Grujić

Monograph "Solutions and interventions for the technological transfer and the innovation of the agro - food sector in south - east regions - TECH.FOOD project" presents the original research results conducted in previous three years, within the The South - East Transnational Cooperation Program. Monograph chapters are clearly structured and include comprehensive scientific opus of actual research results in the field of meat processing sector in the Republic of Serbia. The starting point of the research was integral view of the complexity of the meat processing sector in the Republic of Serbia with the purpose to clearly and fully indicate the main problems that pervade developmental environment and the market, and the importance of this sector in terms of determining the future strategic development of the country. The authors of the chapters through comprehensive and adequate theoretical - methodological approach, including empirical research, cover more aspects of the subject matter and point to:

1. Importance of innovation - strategic concept of risk management and the application of appropriate models of association for the future development of enterprises in the meat processing industry,
2. Justification of the use of marketing as a developmental factor of enterprises in the meat processing industry, together with the development of appropriate managerial skills through the use of consulting as a relevant model,
3. The existence of livestock biodiversity and traditional and indigenous meat products,
4. Implementation of legislation in the field of meat production and the strategy for export stimulation,
5. Economic and financial aspects of production on livestock farms.

Given the previously analyzed developmental aspects of the subject matter, this monograph is of great national importance, and accordingly it should be published. Considering that developmental issues of the meat processing sector in Republic of Serbia are very thoroughly analyzed, with scientific approach, this monograph represents significant contribution to science and society. Also, this monograph will be of use to many professionals, businessmen and scientists in the field of agricultural economics, which are involved in or are planning to be seriously engaged in food processing i.e. meat-processing sector as a very important economic activity in our country.

In Belgrade,
01.12.2012

Reviewer:
Prof. dr Zoran Njegovan
Agricultural Faculty
University in Novi Sad

REVIEW III

Monograph title:

„SOLUTIONS AND INTERVENTIONS FOR THE TECHNOLOGICAL TRANSFER AND THE INNOVATION OF THE AGRO - FOOD SECTOR IN SOUTH - EAST REGIONS - TECH.FOOD PROJECT“

Authors:

Prof. dr Drago Cvijanović, Doc. dr Jonel Subić, Mr Ljiljana Rainović,
Dr Vesna Paraušić, Dr Branko Mihailović, MSc Marko Jeločnik,
dipl.biol. Bojana Bekić, MSc Radojica Sarić, dipl.ing. Marijana Jovanović,
dipl.ing. Biljana Grujić

Publisher:
Institute of agricultural economics, Belgrade, Serbia

This monography indicates the development level of the livestock breeding and meat processing industry in the Republic of Serbia. Monograph consists of five areas*: I Innovative approach to risk management in today's business environment; II Marketing as a factor of enterprises development in the sector of meat industry and development of managerial skills using consulting as a model; III The current state of the livestock breeding and meat processing industry in Serbia; IV Legislation and trade; V Economic-financial aspects of production on livestock farms in Serbia*. The authors point out that the innovative approach includes research, organizational, personnel, financial, marketing, managerial and other activities aimed at shaping new ideas to make them more suitable for practic use. They emphasize the importance of application of the four components of the marketing mix (product, price, distribution and promotion), which equally contribute to the increase of capacity utilization of the agro-food industry. They indicate the posibility for autochtonous species breeding and production of traditional meat products. They analyzed livestock production and meat production (beef, pork, poultry and sheep) for which is determined that they have a tendency of linear decline. Authors emphasize that current subsidies in agriculture in compare to total subsidies have low percentage of participation, and that the foreign trade balance still has a positive value. Given the above, I believe that the monograph is an important contribution to the development of primary livestock production and meat processing industry in Republic of Serbia.

In Belgrade,
01.11.2012.

Reviewer:
Prof. dr Savo Ivančević,
Instittute of Agricultural Economics, Belgrade

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

338 . 439 (4 - 12) (082)
005 . 52 : 631 (4 - 12) (082)

SOLUTIONS and interventions for the technological transfer and the innovation of the agro-food sector in south east regions - TECH.FOOD project: monograph / [editors Drago Cvijanović, Bojana Bekić, Marko Jeločnik]. - Belgrade : Institute of agricultural economics, 2012 (Belgrade : Marketing press). - 107 str. : ilustr. ; 25 cm

Tiraž 400. - Napomene i bibliografske reference uz tekst. - Bibliografija: str. 97 - 102.

ISBN 978-86-6269-014-2
1. Cvijanović, Drago [уредник]
а) Прехрамбена индустрија - Развој - Југоисточна Европа - Зборници б) Пољопривредна предузећа - менаџмент - Југоисточна Европа - Зборници
COBISS . SR - ID 194669324

ABOUT IAE BELGRADE

The Institute of Agricultural Economics (IAE) - Belgrade was founded by the Directive of the FNR Yugoslavia Government in August 1949. During its existence, as one of the oldest and the most esteemed scientific research institutions of agriculture in the country, it has continuously pursued the economic problems in agriculture, analysing them and giving proposals for successful development of this important field of national economy. In beginning, Institute was engaged mainly in tasks set by the former Agricultural Council, but later the cooperation with cooperatives and combines was established and afterwards, an intense field - and scientific research - work has started. Numerous regional researches have resulted with studies, plans and development programs of region and local communities, especially in less developed/mountain areas of country. More than 650 projects have been realized in Institute during 60 years of its scientific research work, in several basic fields, both at macro and micro economic level. In 70s, institute's engagement in applied research has begun, particularly related to numerous activities of the International Bank for Reconstruction and Development. Many regional investment projects, pre-investment studies and market analyses for agricultural enterprises have been realized in that period.

In the latest professional orientation, the institute adjusts to the Republic of Serbia's orientation toward European integrations and activities which direct to creation of developmental documents of strategic significance, adjusted to modern requirements, which mean a base for measures and activities in developmental processes of specific areas or specific sectors, as well as adjustment to integrative processes of the EU in the field of agriculture and rural development. The most represented scientific - research activity of Institute is multi - years - lasting participation on the projects of the Ministry of Education and Science, as realization of ongoing project "III 46006 - Sustainable agriculture and rural development in function of Republic of Serbia strategic goals achievement within the Danube region" for time period 2011 - 2014. Since 2009, Institute has involved in two international projects of South East - Transnational Cooperation Programme (EU Water and TECH.FOOD), as well as in one bilateral scientific - research project between Serbia and Croatia.

Institute has developed scientific, business and technical cooperation with many related institutions from the country and abroad (Romania, Russia, Austria, Germany, Bulgaria, Moldova, Bosnia and Herzegovina, Republic of Srpska, Poland, Macedonia, France, etc.) in the field of agriculture and economics, as well as with companies in the field of agro - economics. Also, Institute has developed publishing activity. Except numerous published monographs, thematic proceedings and books, it is a co - publisher of three journals: Economics of Agriculture, Economics and Transition. In its work, the IAE has devoted significant attention to scientific staff development, encouraging the advanced training of younger associates and their progress, and therefore it has become to a certain extent a recruitment centre of qualified staff for other institutes, universities and companies in agribusiness sector.