ENTERPRISE AND HUMAN RESOURCE MANAGEMENT AS AREAS OF INNOVATIONS

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INTRODUCTION

P. F. Drucker sees innovativeness as a precondition for functioning of organization and the whole economy (DRUCKER P.F. 1992). Ability to be innovative, viewed by M. R. Porter (PORTER M.E. 2001) as a major source of competitive advantage, depends on many endogenous factors which form innovative potential of any organization. The focus of this monograph was on the analysis of management as an area of innovative activities. It analyses both motivations for the implementation of innovations and expected benefits while relating it to examples from this area. Relatively much attention was paid to the problems of humans in the organizational space and highlighting the problems whose solving requires that the decision-makers should be characterised by an innovative approach to human resource management understood in the broad sense. This was aimed to discuss the opportunities for building and developing innovative potential of the enterprise, where the role of the human potential as a creators of new ideas is strongly emphasized.

The monograph represents the outcome of the scientific research performed within international collaboration of scientists from Poland and Slovakia coordinated by Prof. A. Cierniak-Emerych, PhD, with editors: A. Bodak, PhD, Sz. Dziuba, PhD, and A. Pietroń – Pyszczek, PhD.

Being aware of the fact of the multitude of problems in this field, the authors believe that the monograph contributes to exploration of new areas of research concerning innovativeness and represents the topic for the discussion of the scope or limits of the concept of innovation.

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Chapter 1

Krishnan Umachandran[1], Valentina Della Corte[2], Mohamed Mohamed Tolba Said[3]

INNOVATION IN BUSINESS DEVELOPMENT

Abstract: Innovation addresses major barriers to progress by migratory research through collaborative, interdisciplinary developmental initiatives. Critical thinking along with in hands on skills to create, design involves a process of problem solving hypothesis and elaboration followed by creative and systemic action. Innovation is inter-disciplinary embodies a remarkable commonality of purpose among the users to expand the interoperability of connected systems which encourage immediate use and function. This is no less remarkable achievement given the increasing ability to understand the evolution through many trials for setting right the error runs. Interdisciplinary initiatives bring success through frugal investments and outside expertise than the core discipline. Innovation encourages information sharing and facilitates transparency of disciplinary knowledge to a brief, requirement orientation, and relevancy to real demand to be evolved into an interdisciplinary collaboration for successful product evolution. Innovation brings a lot of benefits to the economy, diminishes wasteful productivity, reduces obsolescence, increases product reliability and facilitates life with better utilization of resources.

Key words: interdisciplinary, Critical thinking, interoperable systems, customizations, inclusiveness, education

1.1. Introduction

Technology includes ongoing improvement and increased deployment to accommodate increased penetration to serve market demands. Technology quickly changes forms with creative applications (MARK ET AL., 2014). With easy availability of internet, Entrepreneurship

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involves deep analyzing of consumer needs, securing information to produce goods or services that match buyer expectations and maintain relationships with changes in technology (ROBERTS E.B. ET AL., 2015). Analyzing the gaps between the existing and future state of the business processes, skills and technology, investments requirements, flexibility to adapt to the change and disruptive model needs to be determined (MAURER, W. ET AL., 2014). Selecting a technology for development intensively shifts gears from low too high to avoid time redundancies. Product and process applications keep continuously updating their technology so that to claim supremacy of delivery in eking customer delight (SAWHNEY ET AL, 2001; ERIC, 2002).

1.2. Interdisciplinary Business Technologies

The benefits of technology are interdisciplinary, with web based network brings in cooperation and collaboration simultaneous with security and claim for rights and ownership arises. The technology components combine, use, modify and improve the specificity of customer requirement. Technological representations recreate unlimited scenarios for physical world utilization through virtualization support (VIJAYAKUMAR V. ET AL. 2013). Virtualization know-how is exploited to aid and accomplish better physical resource organization and storage system (LAI G. ET AL., 2010). The technology business drives significant enterprise investments by leveraging IoT and mobility to exploit new market channels through disruptions and meet the demands of Gen Z. Global educational curriculum should effectively address the need of specialized business and IT capability to future technology in information, communication and embedded computing in Automation, robotics and Artificial intelligence (AI) to meet consumer expectations, before becoming obsolete. Cloud computing system with streaming technology connects clients and computing resources, the server virtualization can achieve better physical resource utilization and high performance storage thereby enabling simulations and client QoS (LAI G.

ET AL., 2010). The smart gadgets have collectively become automated through machine learning, cognitive technologies and robotics, replacing all conventional roles in developing, system engineering and testing becoming outsourced along with enterprise architects and transform the business be agile in all levels of volume, velocities and size, to be effectively run on thin budget scope. Employing organizations need to offers its members innovative and leadership programs, and provides them with the tools they need to succeed (LAURIE N., 2013).

The current waves of concern about the outsourcing and offshoring of jobs in the IT service industries, or the more general fear that manufacturing jobs are pulled by emerging economies. This opens new avenues for service providers to innovatively be engaged for technological guidance and transfer cuts with flexible engagement and utilization of specialist resources in development and management. Decentralization of services design to provides better value addition and offers better evaluation of performance and practice. In addition, the organizations managed publicly and privately contribute to elements of good governance and the achievement of sustainable human development goals (BIRUNGI H. ET AL., 2000).

1.3. Sustaining a Business Technology

Sustainable technological entrepreneurship should be focused to preserve and nurture the life as a community in the pursuit. Internet can speed up the development and improve efficiency in emerging economies only through good governance of business environments by nurturing startups, allow the exit of inefficient business and support research (JINGU T., 2014). Innovation motivation which stimulates a vibrant innovation ecosystem and a clean economy and reliable information to make informed decisions – including research, development, and demonstrate business development in a knowledge-based community (MEIER S. ET AL., 2013). Online products have made money market more accessible to the masses and broadened to include younger generations,

with beneficial complement in financial efficiency through different channels (JINGU T., 2014). Technological entrepreneurial need is very creative and wide to include globalizing individual needs, comprising experienced group of people who can provide vital contributions with social consciousness to build sustainable business enterprises (AMUTHALAKSHMI P., 2009). The Technological entrepreneurship revolves around innovation (RAINEY D., 2006, REGUIA CH., 2014, COTTELEER M. ET AL. 2014), evolved demand, revenue sustenance, feasible interventions and unique turn around. Global gardening & Food production, Virtual reality & IoT, Hydroponics & Naturoceuticals, Edible blobs & Biodegradable packing's, Autonomous transportation, Specialty gadgets, quantum dots and additive manufacturing have very minimal competition among Technological entrepreneurs in the local markets. Global space is intense with synergization and every vertical accepts cutting edge deliveries than to prosper with continued demand on existing product and services, in fields such as agriculture, education, infrastructure, health and personalized services. Every business has a unique technology associated with its operations and delivery process (SCHLOSSER E. 2002, UMACHANDRAN K., 2017).

1.4. Changing economical scenarios

The global economy is recovering from the onslaught of recession. Experienced with earlier recession cycles of business, entrepreneurs adopt discretionary fiscal and frugal monetary policies to co-exist with their customers and suppliers. Some businesses which are late to realize and change suffer with the failing economy or tough situations panicking anxiety and unemployment. Course correction leaves taciturn over a wide and comprehensible over-run of time and impact. Linking product and services direct to the customer as an integrated process is facilitated with internet technologies. Intervention alleviating red tape and other barriers during start up gets vanished in times of economic crises, leaving entrepreneurs to swim the turbulence on their own. Preempting these

situations, they need to cautiously prune their activities to be highly dependable and create surpluses during the normal operations (MENTZ J.M., 2006).

1.5. Technology expands beyond digital limits

Technologies are anything made by humans to fill a need or desire, resulted from the process of engineering. In Peru, fog harvesters (made of two polymer layers: the top is hydrophilic, while the bottom is hydrophobic) supply ample drinking water, and also provide enough water for gardening JOSÉ ET AL. (2008). Climate change dimensions are on the supply side changes in precipitation patterns, with major implications for issues such as flood protection, food production, water-based transportation and many other forms of water-based livelihoods. The demand need for water and speed up evaporation from the surface of plants and from water sources such as ponds and lakes worsen the situation. Climate concerns are changes in weather patterns around the critical harvest time and the frequency of severity of havoc incidents.

Technological entrepreneurs should share ownership when only they can make a significant contribution to the venture. Marketing, Finance and Human Resources (RUTH ET AL., 2012) are important functions that need to be linked with the business. Technological Entrepreneurial talent is a new skill required for design, engineering, production, and supply chain and life-cycle management, while venturing into an enterprise evolution. Idea is a bubble from nowhere. Minor modification to the fuel system, liquefied biomethane can displace diesel in heavy duty vehicles and dramatically reduce their carbon foot- print. Swedish automobile manufacturers, led by Volvo, have begun marketing their trucks that run on biomethane derived from an increasing number of filling stations that are related to waste facilities (AUTOMOTIVE WORLD, 2010). Vanderbilt University researchers have found that Quantum dots made from nanoparticles of iron pyrite could help batteries charge up much faster. Technological entrepreneurs do not mind to crossing the sectoral

boundaries. Hybridization of social (AMUTHALAKSHMI P., 2009) and economic entrepreneurship has enormous potential than philanthropic funding.

1.6. Developing and competing in Business

Boundaries of competition are segregated as Industry, Strategic Group and Customer Group on Product or Service Offering, through Functional-emotional Orientation circumference by time. The financial fund flow requires concentration for upscale implementations in establishing SME clusters for sustainable development (AMUTHALAKSHMI P. 2009).

Trading has improved economy in developing countries and interaction among countries and continents results in more of exports and imports, however the need for customers are not utilized properly for their development. Western cultural influences have a tremendous impact on the developing economy more, leading to demand on luxury as a symbol of wealth among educated youth. The banks lure these people offering loans towards the luxury of life products than on to the basics such as housing, health and education that would eventually drive them to sustainable comfort. However, the need for servicing and replacement vehicle components and long-haul / all-terrain commercial vehicles, agricultural and industrial equipment, furniture and household machines and ICT products have a great requirement in Africa (UMACHANDRAN K. 2017).

Regulations and structural reformations right from budgetary support is the need of every African country that which can support the entrepreneurial development. Once the business chain picks up the country can be at peace and development shall happen. To enable such, the ruling governments need to have an eye on the economy on a long-term initiative. Dubious product qualities and underrated goods should be inspected and stopped right even before it finds its way into the country, through proper licensed and regulated imports. Change in people

attitude–perception-motivation, should be towards a healthier lifestyle. An orientation to employees even before induction is a must to tune them for a business mode. A well-developed cross functional team can be a breakthrough for entrepreneurial support (ANDRIES P. & DEBACKERE K. 2004).

1.7. Resource alignment

Manpower costs including cost of living and compensations, Electricity and Health care, Taxes and Other Statutory Payments are important components in Operating costs which impacts the bottom-line of the organization. Hence all the resources coordinated needs to perform optimally for providing continuous and reliable business. Ramping up production will require major changes to grow, handle, transport and store the immense quantities of resources which would impact both direct and indirect on the business. Optimizing resource utilization can be achieved through improvements in many factors including: environmental conditions, consumer usage behavior, utilities specifications etc. The right alignment of people and processes to maximize efficiencies with proper management and capacity planning can result in a range commitment, quality of service, better utilization, and assured service revenue targets in time. Review of the resource management modeling and simulation highlights good achievements possible in the future as it identifies a number of directions and gaps for a better system to be evolved and developed (MOLINA J.M., ESCOBAR C.M. 2008, DARYL C. ET AL. 2014, VAL BUTCHER ET AL. 2011).

1.8. Conclusion

To quantify the economy, performance, and the emissions / wastes or degradation of utilities using alternative technologies modify to exist with the co-positioning of hybrid configurations. Maximizing revenues and minimize costs are important along with Cost-cutting measures to

increase operational efficiency, while the production capacity will continue to occupy prominent positions in the organization's ongoing on Long-term strategic actions. Virtualization is a qualification for setting up a cloud computing setup (VIJAYAKUMAR V. ET AL. 2013). Technology businesses depends on network effectiveness to increases their value proposition and form natural monopolies which are challenged by big data analysis in correlated repo stories of cloud networks, complex market dynamics obsessed with speed of services and reliable monetary transactions.

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Chapter 2

Marta Karkalíková[1]

MANAGEMENT SYSTEMS AS THE MELIORATION ORGANIZATION PERFORMANCE INSTRUMENT

Abstract: Based on a performance and efficiency assessment, organizations have the ability to quantify the impact of their own decisions, including the implementation of management systems, integrated management systems, which represent an appropriate tool for achieving a competitive advantage, supporting continuous process of improvement, product quality, and enforcement on foreign markets. The main role of established management systems is to systematically access the streamlining of processes running in an organization using proven methods that can help organization better meet predetermined goals. The correct evaluation of the effectiveness of individual processes is a prerequisite for their improvement or allocation of the resources. In order organizations to benefit from the implementation and use of management systems, these systems can integrate into one system, giving them the opportunity to improve their economic performance and at the same time improve the quality of production and, last but not least, the image of the organization. Organizations thrive when they maintain a competitive position in their market segments, gaining customers.

Key words: quality, improvement, performance, effectiveness, management systems, integrated management systems, implementation, standards, organization

2.1. Introduction

Implemented management systems and integrated management systems in an organization can provide a framework for continuous improvement to meet customer and other stakeholder requirements, which will also be reflected in performance. They provide the

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organization and its customers with confidence that the organization can deliver products that permanently meet the requirements. Management system implementation reduces production costs and increases productivity in the organization and provides space for product innovation. Quality and productivity are factors that affect the performance. Process performance measurements are intended to provide objective and accurate information on the progress of individual processes so that these processes can be managed by their owners in order to meet all the process requirements. The value of the business is determined by its performance (NEUMAIEROVÁ I., NAUMAIER L. 2002), which is increased mainly through the performance of the main processes. Business process enhancement strategy implies for the company profit, increased competitiveness, better market position and their economic benefits to the organization.

The chapter represents the study of factors that affect the performance, effective and efficient implementation of management systems in the organization as well as identification of the benefits and problems that occur during the implementation of quality management systems and the environmental management system.

Organization´s coordination is defined by the management systems that serve as a tool to improve organization performance. Management systems are important for managing the organization, its functioning, and their implementation is dependent on the company´s management approach, the available resources, and the effective organizational structure. Establishing management systems is a strategic decision for an organization that can help to improve its overall performance, it is a system that must adapt to changing market conditions, customer requirements, whether purchasers or end-users of the organization's products. If the organization wants to achieve economic growth, it must produce and deliver innovative, improved and efficient products and maintain the quality of its products in a competitive environment (KOHLI A. 2015). The introduction of innovative business activities leads to an

increase in the key factors affecting their economic performance (KUBÍČKOVÁ ET AL. 2016).

Productivity is linked to the need to efficiently use of the resources and inputs that are needed to complete the process. The better the use of material, human and information resources, the greater the productivity, which also determines the level of results achievement.

For the organization´s successful and effective operation, it must be directed and managed in a systematic and transparent manner. Continuous improvement of the organization's activities and processes also involves the implementation and maintenance of management systems that are designed to continually improve the organization's performance while addressing the needs of all stakeholders. The goal of continually improving of the management system in the company is to increase the likelihood of achieving customer satisfaction and other stakeholders.

2.2. Management systems

Management systems can generate long-term effects and bring many benefits to all stakeholders. Organizations that have established management systems avoid mistakes motivate and involve employees in increasing the effectiveness of internal processes performance, while quality becomes the essence of their business (ALBULESCU C. T. ET AL. 2016). Improving quality can be achieved by improving processes, particularly *in terms of efficiency and performance.* Improving the quality and productivity can be displayed in the company´s performance. Process and organization performance is a function of quality and productivity. As the relation between quality and performance is perceived by management, research has been realized in Bulgaria, which highlights the importance of quality as a dimension that affects company's competitiveness and products quality (GEORGIEV S., GEORGIEV E. 2017).

The relationship between the organization´s quality and performance can be measured by various quality management tools based on quality management:

Six Sigma – is a method that improves productivity, performance and quality of products and services. It is based on customers' requirements and expectations and it applies verified tools oriented on mistake disposal in the processes of their satisfaction. It is based on the principle of improving business processes by reducing their variability, which reflects the variance of the monitored processes due to a number of random factors. Stability of the processes should be demonstrated at each stage of the product's life cycle. The basis for achieving process stability is to reduce the number of errors of given products and deviations, from the desired value of the monitored parameter of the given product (KRNÁČOVÁ P., KOVÁČOVÁ N. 2011).

Balanced scorecard – is a strategic performance measurement system that originated in the early 1990s thanks to US experts, (KAPLANA R., NORTONA D. 2007). The BSC method is a qualitative performance management tool that is particularly suited to deriving goals from the vision of an enterprise, measuring them through enterprise benchmarks, and setting out measures that lead to goals fulfillment. The benefit of this method is the correct and balanced monitoring of strategic critical success factors and their quantification at different levels of management.

Functionality and efficiency of processes can be considered as an important quality factor and a crucial condition for future business development. It is appropriate to use strategic tools of the global economy and management that enable the enterprises to progress. The implementation of BSC method is reflected in the improved efficiency of business processes, increased number of motivated employees and cost optimization. Organizations that use Balanced Scorecard gain a competitive advantage and are better off the market.

Nowadays, the companies are trying to succeed on the market and to find sources of new competitive advantages and one of these advantages

is a system approach leading to higher efficiency gained from the environmental management system, quality management system or other management systems. In a competitive environment, natural pressure is exerted on organizations to achieve a high level of production quality. The implementation of the management systems will ensure the efficiency and competitiveness of the organization. Efficient decisions of the organization are based on data and information analysis. The organization should gather information at all levels and make decisions based on an analysis of this information. The benefits of an efficient management system are:

- more efficient use of resources and financial performance improvement,
- risk management improvement, protection of people and the environment
- more efficient product creation and higher quality services, and thus increase value for customers and other stakeholders (iso.org).

The process of effective improvement should be considered as a continuous process in which the status achieved should be the basis for further improving the organization´s performance. Improvement is one of the basic principles of quality management systems according to standard *ISO 9000: 2015 Quality management systems. Fundamentals and vocabulary*. Improvement is the basis for the organization to maintain the current levels of performance, to respond to changes in its internal and external conditions, and to create new opportunities. Successful organization is always focusing on improvements in process performance, organization capability, customer satisfaction, and increased innovation efforts.

Established management systems positively affect the organization's image and, in addition to all the practical benefits of their implementation, are generally accepted by the market as a guarantee of organizational control over its processes. All management systems share several characteristics:

- ***process management of an organization***, which requires the development and implementation of a specific system that is the subject of audits within comparing the compliance of its individual components with the requirements of the management system,
- ***the possibility of their application to any organization***, regardless of its size, type or business area,
- ***the implementation of management systems is voluntary for the organization***, although it is easier to identify and overcome various legislative regulations through management systems (IATRIDIS K. ET AL. 2016).

The management systems stimulate organizations to analyze customer requirements, to define processes, to create product, and to meet customer requirements. Companies with established management system provide customer with a confidence, and thus declare that the organization can deliver products that have consistently meet the requirements of quality, environment and are safe.

Quality assurance as an integral part of business management represents the coordination of the activities of all departments so that the products and services have characteristics that match the customers´ requirements. It must involve the whole process of creating, securing and improving quality, including the feedback. One of the important aspects of quality management is the definition of quality management *processes* for which each department and operation is responsible for, to ensure the exchange of information about quality. The second basic direction of quality management concerns its *improvement*, i.e., of all activities oriented on continual improvement of product quality. It is an effort to achieve a new, higher level of quality compared to the previous state and represents the dynamic side of quality management (KARKALÍKOVÁ M. 2015).

If a management system implementation is based on top management requirements and with respect to its predetermined goals, it is considered to become a tool for improving the organization's performance. An effective way to implement management systems also depends on the

involvement of management and staff in the process, during the preparation phase. Employees are responsible for individual processes, leading to more effective individual results but mainly to greater use of the potential of management systems (PSOMAS E. 2015).

Management systems are perceived by the public as tools that improve the organization´s efficiency and the legitimacy of the marketplace. They can generate very interesting and long-lasting effects and bring many benefits to all stakeholders. Organizations with established management systems better meet customer requirements, avoid mistakes, motivate and involve employees in increasing the efficiency of internal processes, while quality becomes the basis of their business.

The management systems implementation in organizations encourages the competitiveness across Europe. Based on studies conducted in selected countries, it can be noted that up to one quarter of productivity growth in organizations in recent years can be attributed to an increase in the amount of implementation of management system standards. This leads not only to the successful implementation and certification of management systems but also to the increased organization competitiveness.

2.3. Quality management systems

Nowadays, the importance of quality management systems implementation according to standard ISO 9001: 2008 *Quality Management Systems Requirements*. is increasing. Established system in the organization leads to continuous improvement in performance; enable more efficient management, measurement and processes rationalization. It also generates the conditions for achieving and maintaining the required product quality level. The main objective is to optimize processes in the firm, with regard to the available resources and the final product quality.

Emphasis is placed on meeting the customer´s requirements. In the market of business entities operating in a competitive environment, the implementation of the quality management system is a management initiative that seeks to maintain stable and potential customers. Implemented management systems in organizations can generate very interesting and long-lasting effects and bring benefits to all stakeholders. The organizational development criterion is the *efficiency and effectiveness* of achieving all the organization's goals and economic performance. The quality management system must be designed and operated (improved) and so to be:

- **practical** - suitable for managers while achieving the results, it is more appropriate if it is introduced by company managers who know the current situation and not by a consulting organization,
- **economic -** increasing the profit ratio and reducing the cost of errors:
  - ***internal* -** they include all expenses for the removal of mistakes with documentation, works in addition to repairs, repeat inspection. This may be the cost of errors in the production and provision of services or the cost of supply,
  - ***external*** - costs incurring outside the organization after delivery of the product to the customer. They are revealing during product use as a result of poor manufacturer performance. Some items are easily discoverable, for example customer claims, warranty repairs. When they occur, loss of a good name and customer dissatisfaction can be caused. They include costs that are related to customer dissatisfaction,
- **documented** - quality manual, quality guidelines, work instructions, quality records on performance evaluation, on corrective actions, audits, etc.

The quality management systems implementation is beneficial for the organization, using the standard *ISO 9001: 2015 Quality Management Systems standard. Requirements* is beneficial for both large and small businesses. Resulting in cost savings and higher efficiency. It also can lead to improving the company's credibility and image, customer

satisfaction, better process integration, better evidence-based decision-making, continual improvement of enterprise culture, and employee involvement identifying areas that need improvement. The organizations require the quality management systems from their suppliers The results of the survey (ISO.ORG.) have shown that firms most often achieve the following advantages by introducing ISO 9001:

- ***internal processes streamline*** - by using the organization standards, they streamline internal processes, shorten the time needed for performance, reduce procurement costs and increase their productivity,
- ***innovations and business enhancement*** **-** the standard serves as a basis for business process innovation, allowing organizations to expand their suppliers' area and reduce the risk of new products being marketed,
- ***penetration to new markets*** - standards have been used as a basis for new product development and encourage product marketing at new markets.

Quality management systems represent a guide to organizational behavior in terms of quality, organization's ability to meet customer needs and serve as a instruction to continuous improvement of individual organization processes, causing the higher possibilities to achieve its strategic goals that are directly commensurate with the satisfaction of customers and other stakeholders. Quality management systems show how the organization manages and controls those business activities that are related to quality. The set of ISO 9000 standards serves to develop, implement and operate effective quality management systems. They contain instructions on how to implement quality management in practice.

They discuss how the organization should manage processes, permanently improve its processes that affect product quality and meet customer expectations. Standards have general framework, and each organization adapts them to their needs, regardless of organization´s business, size, or character.

The quality policy of the European Union in the field of international trade states that subscribers require from their suppliers the evidence of an established and functional quality management system that meets the requirements according to standard *ISO 9001: 2015 Quality management systems. Requirements*. Such evidence is obtained certificate that was issued by the third party- an independent certification body with accreditation. Worldwide, there is a increasing number of the organizations with a certified quality management system, which suggests that quality management standards are an indispensable and very important part of business. An enterprise that is certified according to standard ISO 9001: 2015 gains a competitive advantage over businesses without implemented quality management system.

Quality management serves the systematical management of quality in any organization and ensures that the output required by the customer is at the end of any process. The set of standards ISO 9000 has been developed to help organizations of all types and sizes to implement and operate an effective quality management system.

The standard ***ISO 9000: 2015 Quality management Systems. Fundamentals and vocabulary*** is a principal international standard within quality management. It provides basic concepts, principles, and vocabulary of quality management systems, it is applicable in all organizations, regardless the size. Its purpose is to help the organization management efficiently and effectively implement quality management system.

The international standard ***ISO 9001: 2015 Quality management systems. Requirements***. Is a principal model standard. It sets requirements for a quality management system that an organization can use to satisfy the customer. The standard specifies the conditions for the applicability of the regulations to increase customer satisfaction through the efficient use of the system. It ensures compliance with customer requirements and relevant legislation. It can be used by internal and external organizations, including certification bodies.

The next standard is ***standard ISO 9004: 2009 Managing for the sustained success of an organization. A quality management approach.*** It contains guidelines how to gain the permanent success of any organization based on quality management. It provides a wider view of quality management as a standard ISO 9001: 2015, it addresses the needs and expectations of all stakeholders, and provides guidance on systematic and continuous improvement of the organization's activities.

Standard ***ISO 9001: 2015 Quality management systems. Requirements.*** Provides detailed guidance on the implementation of a quality management system in the company, that should be implemented by management to improve the performance of its organization. It uses a process approach that includes the PDCA Deming cycle Plan - Do-Control – Act, which ensures proper individual processes management. It also deals with risk management, which allows the organization to identify factors that could cause the achieved results of the quality management system can differ from planned objectives. The quality management systems are certified according to standard ISO 9001: 2015. A requirement for a well-functioning quality management system is to meet these requirements:

- ***organizational structure*** – it defines relations of subordination and functional links between job positions, departments, etc.,
- ***competences and responsibilities of the employees***, which determine their competencies,
- ***procedures documentation*** – they define how ongoing processes should be performed in the organization,
- ***records of the organization's activities*** – they enable tracking of the processes progress and provides information on how the processes in the organization have actually been implemented,
- ***resources*** needed to ensure quality (human, available, financial, information, material, but also working environment and infrastructure).

Effective and efficient quality management systems implementation according to *standard ISO 9001: 2015 Quality management systems.*

Requirements becomes an aid to achieving the organization's goals. The standard serves as a guide to the quality management system implementation and helps to influence the organization performance. To achieve better organization performance, management should focus on raising the level of its employees, improving and strengthening relationships with suppliers, with their customers and stakeholders. A well-motivated employee, a satisfied supplier, a customer and the environment are the best prerequisites for the smooth organization development.

Implementing the management system according to one of the standards so that all its benefits are defined out of its main processes, it would be a mistake for the business. Ideally, if it unites with process analysis, where business processes map is created, and each process are determined by the parameters such as process owners, goals, and measurable performance indicators. Quality management will become a part of all the processes carried out in the company. The benefits of quality management system implementation can be described from different perspectives:

- ***employees*** - higher job satisfaction, better working conditions, increasing morale, improving safety and health at work, enhancing job stability, and meeting the requirements of standards and processes that should be followed when creating a product,
- ***customers*** - a real benefit from the product and service purchase. Once subjective and objective requirements and customer expectations are met, they will benefit from partnership, stability of mutual relations, mutual understanding and quality of the enterprise,
- ***demand*** is very difficult as the offer and demand come from customers with their individual needs, interests that cannot be predicted sufficiently,
- ***company owner and investors*** are the benefits in terms of improved results of activities, higher profit, increased return on investment and increased market share,

- ***organizations*** will benefit from meeting the regulatory and legal requirements, adaptability to changing market conditions, higher productivity, lower cost, better market position, cost management, elimination or reduction of business mistakes and better innovation processes.

The management systems implementation according to standards ISO belongs to the voluntary activities of organizations, it is a significant factor of the competitive advantage, their continuous improvement based on objective measurements can have a positive impact on the increase of pro performance and the whole system. Organization by this approach increases the value of processes and steadily increases performance. When implementing the quality management system, it faces various obstacles such as:

- ***Content - conceptual***, which are fundamentally in directly relation to the quality management system requirement. There may be differences in understanding the notion of quality and quality management, which may lead to a different attitude and misappropriation of quality measures.
- ***Organizational - structural,*** which may due to necessity to implement a quality management system in the organization, whit regards to existing structures and hierarchies. If there is a lack of responsibility for quality management and cooperation between departments, it may hinder the quality management system implementation,
- ***Personnel - business cultural***, which are manifested by the various employees´ opinions about values, based on the ways of thinking and behavior as well as on the existing company culture.

The standard ISO 9001 is compatible with standard ISO 14001 in order to bring benefits to the user community and it does not contain requirements that are specific to the environmental management system, the system of safety and health at work, financial management and risk management, etc. It discusses the quality management throughout the product lifecycle and it forms a universal framework for managing

business processes. From the point of view of owners and investors, the benefits mean improved results of processes, activities, higher profits, increased return on investment and increased market share. The organization itself will benefit from meeting the regulatory and legal requirements, adaptability to changing market conditions, higher productivity, cost reduction, market position, cost management, eliminating or reducing organizational mistakes and better innovation processes.

2.4. Environmental management

Nowadays, many environmental management tools are based on a systemic and preventive approach to environmental protection. The environmental protection is related to all business processes, so the organization's environmental strategy should define the environmental, rationalization, health, social, and economical goals regarding the environment. Many buyers and customers prefer the organizations that carry out their activities to reduce negative impacts on the environment and to contribute to sustainable development. An environmental business approach can provide the organization with several benefits in the long-term perspective, increasing competitiveness and sustainability.

Environmental management systems are voluntary environmental protection tools and integrate this protection into a complex business management system. In Slovak republic, there are two environmental management systems used and: *ISO 14001: 2015 Environmental management systems. Requirements with guidelines for use*. and the European Community Scheme for Environmental Management and Audit. Both systems have common features that can be used for any type of organization.

International standard *ISO 14001: 2015 Environmental management systems. Requirements with guidance for use* coordinates company activities that affect the environment. The organization focuses its activities on improving the environment by implementing the

environmental management system. The established system of environmental management provides the organization with a competitive advantage and it improves its attitude towards customers, employees and shareholders.

Organizations implement environmental management systems with the intent to contribute to the environment protection. Increasingly stricter legislation is influencing social expectations of sustainable development, personal accountability and transparency. Sustainable development is achieved by the equilibrium of three pillars - environmental, economic and social (GALETTO M. ET AL. 2017).The economic aspects of the environmental policies of the developed countries are reflected in the following strategic and operational objectives:

- applying the return right on funds spent on environmental protection and creation,
- creation of allocation, redistribution and stimulation effects,
- implementation of environmental enterprises audit,
- implementation of valuation system of natural resources, which also includes their environmental value and the costs associated with their protection,
- advantage of environmentally friendly products.

Standard ISO 14001: 2015 provides organizations with a framework for environmental protection, specifies requirements that allow companies to achieve the expected outputs that are set for their environmental management system. The benefit of a systematic approach to environmental management is distribution of important information to management and bringing the opportunities for contributing to sustainable development through environmental protection, mitigating the adverse effects of environmental situations on the organization, and improving the environmental performance of the organization. The implementation of environmental management system according to standard ISO 14001: 2015 has the following advantages for the organization:

- competitive advantage,
- more possibilities to enter the public procurement,
- good company image and environmental management system certification,
- compliance with generally binding legislation,
- demonstration of environmental improvement,
- transparency of used natural sources,
- more efficient and efficient use of raw materials, energy,
- minimization of fines for non-compliance with environmental regulations.

Organizations conduct their own environmental reviews or audits to assess their environmental behavior, but these are inadequate. The right way to make these activities effective is to implement them within a structured management system. It is uniform for all company and gives certainty that the company behavior is responsive to all the requirements now as well as in the future. With growing interest in maintaining and improving the quality of the environment, many organizations are increasingly turning their attention to the potential environmental impacts of their activities.

The environmental management system allows to look for all the sources of negative enterprise impacts on the environment, assesses their importance, adopts realistic measures to reduce them, and evaluates the results achieved. This type of behavior is a commitment for organization as it is a process of permanent improvement of the organization's relationship to the environment, reducing environmental burden and improving the environmental profile.

Efficiency and the rate of return on investment on the environmental management systems implementation depend on certain conditions:

- to identify past, present and future aspects of environmental protection,
- the level of development of management systems of the organization
- quality and quantity of available resources,

- skills, knowledge and competence of employees for assigned responsibilities and internal communication,
- stakeholders´ expectations,
- compliance with legislation and other organization requirements.

When implementing environmental management systems, *internal and external costs* are distinguished.

External costs related to the environmental management systems implementation include costs for environmental management systems certification according to standard ISO 14001 and for European Community Environmental Management and Audit Scheme registration, consultancy costs (trainings, audit, initial evaluation, etc.). The external costs of the European Community Environmental Management and Audit Scheme are only slightly higher than costs during the environmental management systems implementation according to standard ISO 14001. The reason is mandatory environmental disclosure.

Internal costs depend on the organization´s size and area of economic activity. They incur costs for implementing and maintaining the system. Consistent quantification of costs needed for building and maintainance of environmental management systems according to standard ISO 14001 is relatively demanding and depends on:

- environmental profile,
- the size of the organization,
- the scope of advisory services,
- the scope of implemented and functioning elements related to environmental protection.

Environmental aspects became well- known in 1960 s, in the context of continuous environment degradation caused by rapid industrialization, and at that time they were perceived as local pollution problems that threaten human health and can be addressed through national regulation. Environmental management systems seek to minimize environmental damage. Organizations systematically manage the level of their environmental behavior and can approach the creation and protection of the environment in all aspects of business. Through this preventive tool,

the firm incorporates the environment into its business strategy as well as daily operation. The requirements of future markets environmental aspects, transformed into business decision-making, are oriented towards:

- concretizing the vision of environmental development in corporate environmental policy programs,
- identification of suitable and measurable performance indicators in the field of environmental protection,
- implementing a comprehensive dialogue between product market subjects,
- satisfying all stakeholders,
- integrating environmental issues into all business processes.

The additional benefit of the established environmental management system is that it expects from the suppliers to have a more responsible approach to protecting the environment. This business ethics has led to the requirement for suppliers to have an implemented environmental management system. The aim was to create, implement and maintain a structured environmental management system. The system is part of the overall management system and covers the elements of environmental behavior in the organization.

The environmental management system implementation brings different benefits to the organization and in different areas. They may be related to *company management, employees, economic benefits, public relations, business activities and marketing.* The organizations may encounter industrial barriers (lack of necessary information, lack of financial resources, configuration of daily activities, competitive pressures and industry regulation) and organizational barriers (employee attitudes, poor communication, previous experience, inadequate skills and education of employees and senior management) when implementing the standard ISO 14001. And there are many other barriers:

- problems with understanding the conditions set out in the norm,
- the necessary costs of training, audit fees and audits,
- costs of implementation, certification and maintenance of environmental management systems,

- lack of support and necessary resources for small and medium-sized enterprises,
- unclear instructions for workers to deploy environmental management systems to an organization,
- insufficient and incomprehensible guidelines for employees, suppliers and other stakeholders in setting objectives and tasks,
- problems with understanding the conditions set out in the norm.

Barriers can be partially eliminated if organizations deal with environmental issues even before implementing standard ISO14001: 2015. Necessary costs of maintaining environmental management systems are lower in the next years compared to the first year. However, it is difficult to determine it as each organization is specific.

The environmental management system is process-oriented to the conditions of the organization, processes and procedures that enable the continuous development and improvement of environmental policy and thus the achievement of the objectives set. Through this system, there is a need for businesses to deploy such activities that eliminate discrepancies in the interests of the market, society, and environmental interests. In addition to the environmental management system in accordance with standard ISO 14001: 2015, the European Union is also *implementing* ***The European Community Environmental Management and Audit Scheme*** as a voluntary instrument of the European Union in the field of environmental policies, with the aim of constantly improving the environment.

EMAS is a reliable and effective market management tool for organizations that intend to improve their environmental performance through added value and against the requirements of environmental management systems according to the international standard ISO 14001 standard, in particular:

- in accordance with environmental legislation with fulfillment guaranteed by state,
- compulsory reporting to the public through the environmental statement of the organization,

- increased employees engagement.

Implemented environmental management systems according to standard ISO 14001: 2015, the European Community Environmental Management and Audit Scheme uses technologies that reduce environmental burden and bring improvements to the environment. They are very important for the organization as they reduce costs, product failure and the number of errors and disasters of technological systems, improvement of work safety and crash readiness, improvement of environmental indicators, reduction of energy consumption and overall improvement of the economic and environmental economy of the company.

2.5. Integrated management system

Management systems can be integrated to each other, those with basic common features that ISO 9001, ISO 14001 and OHSAS 18001 are mutually compatible and based on the Deming PDCA model. In order to management systems´ natural and consistent support of individual processes in the company, they can be integrated with each other (management systems can also be integrated with each other).

An integrated management system can be understood as a combination of processes, procedures and practices applied in the organization in order to implement management policies. In nowadays globalized society, many organizations have embraced an integrated management system as a result of having a competitive advantage.

There are several factors in the decision- making process that affect the success of an integrated management system in the organization. Benefits related to the integrated management system implementation represent a key role in the management decision to integrate the management system and to perform the process. Factors are divided into two groups:

Organizational factors – they are important when introducing an integrated management system as the implementation is totally dependent

on the strategic planning level and it includes policy in order to introduce the improvements in the organization. These improvements are, for example, operational benefits, a better external image, greater customer satisfaction and an increase in employees´ motivation.

Managerial factors -it should also be considered as one of the main reasons for encouraging the use of an integrated management system in the organization that provides external benefits in certification, a simplified certification process, and thus a reduction in certification costs

In the integrated management system, all activities and processes must be planned, managed and audited in such a way that all customer and stakeholder requirements are met. The creation, implementation and improvement of an integrated management system is realized through a process approach, what means that the individual activities in an enterprise are managed as a process in accordance with the requirements of the system standards. The application of these systems to practice is based on the voluntary participation of enterprises. The main benefits and motives of management systems integration should be synergies, respectively achieving a synergy effect and saving money, respectively reducing additional costs. Businesses are aware that the application of enterprise management approaches in its complex integrated form brings benefits. Before implementing the integrated management system, it is important to determine the efficiency and effectiveness of the company management and to reconsider the individual management systems that will be integrated. It is also important to determine the extent to which integration should be realized, to assess the legislative requirements and to define the necessary competences and long-term objectives within the integration project.

2.6. Conclusion

The organization can gain a wide range of benefits, whether strategic, economic, operational, managers or benefits for employees by successful implementation of management systems or an integrated management

system. From a theoretical point of view, the management systems are perceived as a tools for more efficient management of processes in an organization. Effective and efficient implementation of management systems into an organization improves performance and maximizes profit through increasing the satisfaction of both internal and external customer.

Businesses are becoming increasingly aware of the importance of not only meeting customer needs by delivering quality products and services to achieve success and maintaining a competitive and stable market position, but the importance of protecting the environment, creating quality and safe working conditions for employees and, last but not least, the realization of social responsibility.

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Chapter 3

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FOOD SAFETY MANAGEMENT SYSTEM ISO 22000 ON THE EXAMPLE OF THE POLISH POULTRY COMPANY

Abstract: ISO 22000 is a standard that allows companies to manage food safety hazards and associated risks at each stage of the supply chain, increases the confidence of customers and entities cooperating with the company. The aim of the chapter is to describe food safety management system according to ISO 22 000 in the selected polish poultry plant. The article describes the prerequisite program, the operational prerequisite program with particular emphasis on Control points (CP) and Critical Control Points (CCP). Qualification and evaluation of suppliers, quality control of raw materials and goods.

Key words: food safety, ISO 22000, food plant, poultry

3.1. Introduction

Production of safety food has become not only a priority requirement for the food chain, but also the rights for consumers in recent years. The current food market is characterized by strong competition where production of safety food is a necessary requirement for the domestic and foreign manufacturers (LACKOVÁ A., JAROSSOVA M.A. 2016).

Food safety and quality are key factors for stable economic growth of food manufacturers, which affects macroeconomic indicators, important sources of material and energy and limiting factors for sustainable development. The growing turbulence in the business environment (e.g. market globalization, changing the structure and attributes demand, competition) as well as the efficient utilizations of human, information

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and financial resources increasingly force manufactures to adapt to changing conditions. The experience of recent decades shows that even small failure in the system of production and distribution of food can have far-reaching and serious consequences (KOLLÁR ET AL. 2008). Although the task of each company in the food industry is supplying safe products for the consumer on the market, food scandals have again appeared on the European market in the recent years (KOŠUTOVÁ T., JAROSSOVÁ M. A. 2014).

One of the five basic consumer rights is the right to health and safety. The consumer purchasing any product assumes that it does not constitute any danger for his health and life, and because it is available on the market, it meets the mandatory legal requirements. Unfortunately practice shows, that some products that go on the market may endanger the health or life of the consumers. In many cases, this is due to non-observance of the requirements of hygiene - sanitation during production, the lack of approval, declaration of conformity for the raw materials and/or support materials, and improper storage of raw materials and finished products, which contribute to bacterial microbial growth.

In 2005, the International Organization for Standardization ISO based on previous experience with quality systems developed the new standard ISO 22000:2005. Food safety management systems - Requirements for any organization belonging to the food chain targeted for manufacturers, distributors and any entity whose activities directly or indirectly affect the quality and safety of food products. Implementation of this standard by any food company can contribute to increasing consumer confidence in the products of the company.

ISO 2200:2005 was developed with a specific focus on an FSMS and closely integrates with ISO 9001, a quality management system standard. ISO 22000 cannot stand alone as a GFSI-approved scheme; however, when combined with the requirements of ISO 22002-1, it becomes FSSC 22000, which is a GFSI-recognized scheme. ISO 22002-1 is titled "Prerequisite programmes on food safety – Part 1: Food manufacturing". This document replaces the original PAS 220. Additional PAS documents

have been developed: PAS 223 (managing food safety for packaging) and PAS 222 (prerequisite programs for food safety in the manufacture of food and feed for animals). It is expected that, FSSC 22000 will extend its scope to include these, along with future-focused industry-specific PAS documents. However, in the meantime, it is encouraged that if these or any other PAS documents apply specifically to the food segment of interest, they be used for guidance in defining and establishing prerequisite programs (NEWSLOW D. 2012).

ISO 22000 specifies requirements for a food safety management system where an organization in the food chain needs to demonstrate its ability to control food safety hazards in order to ensure that food is safe at the time of human consumption. Key elements of this standard are:

- active communication and cooperation within and outside the company with suppliers, contractors, customers and legislative bodies,
- management system according to ISO 9001,
- seven principles and the twelve steps of the HACCP system based on *Codex Alimentarius*,
- prerequisite programs (PRP) and operational programs.

Both systems i.e. ISO 9001 and ISO 22000 are based on (KIJOWSKI J. 2007):

- uniform process approach,
- the involvement of management and all staff,
- the consistent implementation of established policies and objectives,
- a procedural approach to all activities,
- conducting monitoring and detailed records and primary treatment of the client (the client cannot be misled as regards to food safety - quality).

Food safety hazards can be introduced or increased at all stages of the food chain ("from farm to table") which is why it is important to perform both adequate supervision and care of raw materials and the environment in the whole area of production and processing, as well as supervision of quality at the time of transport, storage and distribution.

Most large companies producing and exporting food abroad or supplying its products to retailers must implement and certify quality management systems and food safety. Within functioning quality, management systems and food safety, plants are required to make the qualification and assessment of suppliers of raw materials, auxiliary materials and products (KOSIOROWSKA M., LESIÓW T. 2010). Under the present conditions of economic development, technological advances and competition for customers the quality is the value that can differentiate the firm against the others, to help open up new markets, as well as help to establish more effective cooperation with the surrounding businesses, such as suppliers. The supplier should provide the buyer access to objective information underlying the decision to choose sources of supply. Deliveries should meet the requirements of the buyer, and the same supplier as a company should respond flexibly to current customer needs and possible proposals for improvements and enhancements resulting from carrying out a systematic evaluation of the supplier. Evaluation of suppliers cooperating with the company is carried out in order to verify their actions and see their involvement, taking into account such criteria as price, product quality, deliveries and their servicing (NIEWELT A., LESIÓW T. 2011).

Evaluation of suppliers is carried out to determine the ability of suppliers to deliver products in accordance with the requirements of the company, as well as to their classification. The benefits for the company, which entails the process of auditing suppliers, are namely: a reference to facilitate communication between the supplier and the recipient (faster and more efficient flow of information), detailing customer requirements in relation to the supplier (the requirements for not only the quality of the raw material, but also the entire delivery: on time, quantitative performance of the contract, after sales service), observation of the weak areas of the company, continuous improvement of suppliers management systems to take preventive action before the problem occurrence, are universal, irrespective of the industries represented by the company, and are very important from the standpoint of the quality produced good.

Post-audit activities should be accompanied by supporting programs to improve food safety, as well as the quality of the final product (ORZECHOWSKA-PRZYBYŁA K ET AL., 2012).

The aim of the chapter is to describe food safety management system according to standard ISO 22000 one the example of one polish food company.

3.2. Methodology

The poultry company described in this publication is one of the major producers of aquatic (Barbarie and Peking ducks, geese) and gallinaceous poultry (turkeys, chickens) in Poland. The assortment of offered commercial products include:

a) frozen or chilled carcasses of ducks, geese and turkey,
b) frozen or chilled culinary elements from ducks, geese or turkey (legs, fillets, breasts, wings, trunks, heads and feet)
c) raw meat from the ducks or geese wings,
d) offal.

The company since year 1999 has a Hazard Analysis and Critical Control Points system (HACCP), which Polish food producers have to have since 2004, from the day of Poland's accession to the structures of the European Union. The described company had a much earlier implemented HACCP system, because European recipients demanded it. The company has export rights and sells most of its products mainly to Germany, France and Switzerland.

Most poultry companies implement and certify two types of international voluntary standards for food producers, namely the IFS and BRC standards. In the described plant, the ISO 22000 and IFS standards were implemented and certified, but the article will only apply to the first of these systems. Continuous improvement of the quality and safety of manufactured products influenced the decision by top management on implementation and certification of the international Food Safety Management System according to the ISO 22000 standard. *Food safety*

management systems - Requirements for every organization belonging to the food chain.

An independent accredited unit DEKRA certified the system in 2008, which contributed to the acquisition of new customers and contractors and strengthening of the company's position on the market. The described company will be presented as "Company X" for the purposes of this article.

3.3. Results and discussion

The company wanted to export its products to Switzerland, France and Germany. To be able to export the products, the company implemented a system of Hazard Analysis and Critical Control Point (HACCP) in 1999. The scope of the HACCP system included: the acceptance of raw material, purchase of parts and offal for processing from other plants, chicken slaughter and processing.

One of the first, which the company developed and implemented, was the prerequisite program (PRP). This document created to oversee (ISO 22000:2005):

- the likelihood of introducing food safety hazards to the product through the work environment,
- biological, chemical and physical contamination of the product(s), including cross contamination between products,
- food safety hazard levels in the product and product processing environment.

The prerequisite program was prepared based on EU Regulations 852/2004 and 853/2004 relating to sanitary and technical requirements for slaughterhouses and poultry and meat processing plants. The document included meeting the requirements of Good Manufacturing Practice and Good Hygienic Practices that had been implemented and maintained by the Company to ensure proper hygiene and sanitary conditions for the production of safe food for the final consumer. In all given areas have been identified the applicable legal rules, in addition

Food Safety Team has developed a plan to verify the prerequisite program with the aim of modifying and maintaining records as evidence of actions taken with the verification and modification.

The prerequisite program covered the following areas:

- plant location plan (including all buildings and rooms),
- technological plan of the Company (with division into clean and dirty area)
- surrounding buildings and premises of the plant,
- staff and visitors,
- training of workers,
- management of raw materials and auxiliary,
- prevention of pest control,
- cleaning and disinfection,
- waste management,
- water and sewage,
- machinery, equipment and small equipment,
- storage of finished products,
- overseeing the means of transport,
- supervising the energy factor,
- proceedings at the time of removing the breakdown.

The operational prerequisite program was the second document developed in poultry company. This program should be documented and include the following information (ISO 22000:2005):

- food safety hazards that need to be supervised under the program,
- control measures,
- monitoring procedures that demonstrate that the operational PRP is implemented,
- corrections and corrective actions to be taken if monitoring shows that the operational prerequisite program is not in control,
- responsibilities and authorities,
- records of monitoring.

In order to develop operational prerequisite program a Food Safety Team, first reviewed the documents related to the finished product and technology process, i.e.:

- raw materials, components and materials in contact with the product,
- the properties of finished products,
- the intended use of the finished product,
- a description of the various stages of operations and processes, technological schemes and applied surveillance measures.

Food Safety Team carried out an analysis of risks and appointed the

Control points CP within the operational prerequisite program and critical control point CCP within the HACCP Plan.

A decision tree by *Codex Alimentarius* was used to carry out hazard analysis. In our company within the operational prerequisite program was designated nine **Control points CP** (COMPANY MATERIALS. 2007):

- CP-1 Breeding supervision of the contracted material.
- CP-2 Efficiency control of stunner and knife sterilizers' efficiency.
- CP-3 Temperature control of poultry scalding.
- CP-4 Control of knife sterilizers' efficiency at evisceration.
- CP-5 Temperature control in the hall and knife sterilizers' efficiency.
- CP-6 Temperature control in the hall of packaging.
- CP-7 control of packaged and labelled product
- CP-8 control to allow an employee to work
- CP-9 control of manual cleaning of the stomachs

For each CP, instruction was prepared: for the purpose of its monitoring, operating in case of exceeding limits or improper execution of an operation involving corrections and/or corrective action with defined responsibilities and authority of persons responsible for the realization of action on the stage and recording forms in aim to confirm the execution of certain actions.

The next document prepared by the Panel on Food Safety under ISO 22000 was the HACCP plan. In the company's slaughtering and

processing line of poultry were set out five **Critical Control Points** (COMPANY MATERIALS. 2007):

- CCP-1 Acceptance and testing of live poultry for the presence of Salmonella.
- CCP-2 Assessment of dirty part of processing of the poultry carcass which are sending to the clean area.
- CCP-3 Meat re-inspection - poultry processing line.
- CCP-4 Temperature control of chilled meat - the poultry processing line.
- CCP-5 Temperature control of frozen products transferred to a chamber component.

The HACCP plan was documented and for each identified CCP was included the following information (COMPANY MATERIALS. 2007):

- food safety hazards that need to be supervised by the CCP,
- control measures,
- critical limits,
- monitoring procedures,
- corrections and corrective action(s) to be taken if critical limits are exceeded,
- responsibilities and authorizations of decision-making persons
- certain technological operations,
- records of monitoring.

Table. 3.1. CCP control scheme

Stage of the process	Monitoring*		Criteria and tolerances	Corrective action	Records
	Method of control and control values	Frequency			
Adoption of the raw material (CCP1)	Instruction of inspection of animals for the presence of Salmonella. Visual evaluation	Each herd delivered for slaughter.	Lack. A herd considered to be fit for slaughter.	The withdrawal of the herd to the farm. Instructions for the adoption of poultry.	Monthly records of proceedings in CCP1 One month in the office of champions. 3 years in the settlement office.
The transfer of carcasses to a part of the pure (CCP2)	Instructions for evaluation of dirty ducks processing. Visual evaluation of the purity of the carcasses	Each carcass after removing the wax cover.	Individual sub sticks are allowed on the entire surface	The employee removes the defects or turns the carcasses on the line. Instructions for corrective action.	Register of defects to CCP2 and protocols of corrective actions One month in the office of champions. 3 years in the settlement office.
Reinspection of carcasses (CCP3)	Manual of the reinspection of carcasses. Visual inspection of carcasses after gutting and internal and external washing.	Each carcass after gutting and internal and external cleaning.	The remains of small fragments of the lungs are allowed, approx. 2 cm tracheostomy and small reproductive organs.	The employee removes the defects or returns the carcasses to re-clean or washing Instructions for corrective action.	Register of defects to CCP3 and protocols of corrective actions. One month in the office of champions. 3 years in the settlement office.

Transfer of carcasses to share or packaging. (CCP 4).	Temperature control instructions. Temperature control in breast muscles or the thickest block layer (not higher than 4 °C).	Measurement every 1 hour in at least 5 attempts, every assortment transferred to the sharing hall for processing.	Lack. Temperature not higher than 4 °C.	Production suspension - cooling down of carcasses. Instructions for corrective action.	Temperature registers for CCP 4 and protocols for corrective actions. One month in the office of champions. 3 years in the settlement office.
Delivery of goods after freezing to the storage chamber (CCP5).	Temperature control instructions. Temperature control in muscles or the thickest block layer (no higher than -12 °C).	Measurement of each batch of goods transferred to the storage chamber.	Lack. Temperature not higher than - 12°C.	Suspension of reloading and cooling down of the product. Instructions for corrective action.	Temperature registers for CCP 5 and protocols for corrective actions. One month in the warehouse manager's office 3 years in the settlement office.

*Source: Company documents, *the persons responsible for the implementation of the task were given by name, therefore this information was not included in the table*

Qualification of new suppliers

The qualification of suppliers for the company is carried out using the qualification criteria. For each group of suppliers, the qualification criteria are specified that the supplier should meet. The establishment has determined 10 qualification criteria, i.e.

- Does the company offer price negotiation?
- What is included in the product price offer (e.g. free transport)?
- Does the company provide guarantees for its products?
- How wide range of products does the company offer?
- Does the company provide HDI (Trade Identification Document), declarations of conformity and test results for the products?
- Does the company have set specification for the delivered products?
- Whether customer complaints are considered and accepted?
- How quickly is the company able to complete the order?
- What are the payment terms and payment form (e.g. transfer, cash, etc.)?
- Does the supplier have implemented quality systems and are they certified?

The scale of points awarded to the supplier is from 0-5. Obtaining below 3 points disqualifies the supplier from the possibility of cooperation with the company.

In the case of certification of suppliers of poultry for slaughter, the following criteria have been defined: rearing facility should be approved by the Veterinarian competent for the place of origin (conditions for keeping the farm, i.e. proper surface and equipment, and other according to applicable regulations), and the appropriate financial conditions to carry out rearing. A supplier that meets the above criteria is considered a qualified supplier, and is written on the "List of qualified suppliers of poultry for slaughter". A contract is signed with such a supplier. In case of the qualifications of suppliers of transport means of live poultry for slaughter and finished products, the requirements (eligibility criteria) are set out in the "Procedure for the supervision of means of transport". Meeting the requirements is confirmed by placing in the "List of qualified

suppliers of means of transport for the transport of poultry and finished products".

Suppliers evaluation

Each supplier of poultry for slaughter in the establishment is subject to ongoing assessment based on the information contained in the "Proof of delivery of poultry for slaughter" prepared for each delivery and other related documents". Each supplier of carcasses, poultry elements is subject to ongoing assessment based on the information contained in the control card accepting the goods to the establishment prepared for each delivery and other related documents. Each supplier of supporting materials is subject to ongoing assessment based on the information contained in the Control Card for acceptance of auxiliary material to the plant prepared for each delivery and other related documents. Suppliers of raw material (poultry for slaughter, raw materials for production, auxiliary materials and other materials for production) after qualification are subject to ongoing evaluation.

The result of the assessment is recorded in the "Supplier Assessment Card". If the assessment has identified some issues (as e.g. incomplete plumage or poor fattening), they should be indicated in the section "Remarks/additional information" .

Service providers and suppliers of means of transport after qualification are subject to assessment based on criteria contained in the Service Provider Evaluation Chart. If the result of the assessment is below 3 points, it disqualifies the supplier from the possibility of cooperation with the company.

Once a year, the overall assessment of suppliers that performed deliveries in the current year to the plant is carried out. The assessment is carried out based on the evaluation sheet containing the criteria. If the supplier is assessed positively (he scored the average number of points ≥ 3) he remains on the list of suppliers.

In a situation where the supplier does not meet the requirements, he may be allowed conditionally (if the defects do not concern compliance

with the law or pose no threat to food safety). In this situation, the supplier should be informed about the need to take action and obtain a commitment from the supplier to carry them out. Obtained results of suppliers' evaluation are collected and analyzed once a year. Drafted records - evaluation results are communicated to the management review.

The following criteria are taken into account in the assessment of suppliers (Qualification card of suppliers):

- approval by the District Veterinary Physician competent for the place of origin, production and operation,
- conditions for keeping the farm, i.e. the correct area and equipment, and other according to the regulations in force,
- the distance of the farm from the slaughterhouse,
- quality of the supplied raw material (plumage status, damage, condition of the livestock, muscles, organoleptic characteristics, temperature, condition of packaging, compliance with the product specification provided),
- identification, timeliness of deliveries, quantitative compliance of delivery, delivery of required documents (HDI - commercial identification documents, declarations of conformity, test results),
- price,
- complaints,
- transport conditions,
- contacts (availability, cooperation, competence).

Some of the above criteria also include requirements that are more specific. The supplier can get the maximum average number of points 5. If the supplier has obtained an average number of points ≥ 3, the supplier is considered qualified.

Supplier can receive from 1 to 5 points for fulfilment of the requirements, i.e.

- 5 - full compliance with the requirements,
- 4 - almost full compliance with the requirements (sporadic deviations),

- 3 - (average compliance with the requirements, acceptable after meeting additional conditions (e.g. delivery of documents, improvement of quality),
- 2 - poor compliance with requirements,
- 1 - non-compliance with requirements - unacceptable quality.

Quality control of raw materials and goods

The plant has prepared the instruction "Quality control of raw materials and goods". The purpose of the instruction is to determine the method of conduct during the quality control of the delivery of goods for processing or sales to limit the introduction and /or elimination of the threat to the quality of the finished product. Also, to make sure that the transport conditions guarantee the undisturbed quality of the raw material received to the company. The instruction is applicable in the Plant when goods and sales materials for further processing are received by the warehouse, covered by the scope of the food safety management system according to the ISO 22000 standard. The quality control of raw materials and goods supply includes 5 stages.

Stage 1. Before unloading a delivery truck, check that the delivery has the required documents, whether the goods have been properly secured for transport. In the case of delivery of the raw material takes place in the cooled state, the temperature in the hold of the means of transport is checked using an electronic thermometer.

Stage 2. Check the transport conditions:
- cleanliness and technical condition of the means of transport,
- the presence of pests or their residues,
- way of securing goods for transport (stacking on pallets, etc.),
- the possible presence of other goods that should not be transported together with food (e.g. chemicals, items that could damage the transported raw materials),

- condition and diversity of packaging (direct and indirect, containers and cartons).

Stage 3. Only after assessing the conditions of transport, the check should proceed to a visual inspection of quality of delivery. In case of doubts as to the quality, the plenipotentiary responsible for quality and food safety, must be notified about this. Visual inspection of the quality of raw materials starts with the examination of the packaging. It should be controlled, if they are not damaged, dirty or flooded. Any damaged packaging must be sorted. The decision to accept them to the company should be made after the risk assessment. The packaging of vacuum-packed products must be completely deaerated. Raw materials transported in bulk should be placed in clean containers.

Stage 4. The next step in the assessment of products is to check the information given on the label of the food. This information should comply with the regulation of the Ministry of Agriculture and Rural Development. Attention should be paid in particular to the indication of the expiry date or the date of minimum durability and legibility of markings. Do not take food into the warehouse from the ending date of expiration, in particular, products with a long shelf life.
The following information should appear on the packaging of the foodstuff:

- name and address of the manufacturer,
- trade name in accordance with the product range in the middle (order),
- label with an oval mark identifying the producer,
- specification of storage conditions,
- batch designation of the delivered raw material (possible identification of the batch in the event of withdrawal of the raw material from the market),
- date of shelf life or minimum durability.

Stage 5. The final stage of quality control of deliveries is the assessment of the food itself. This phase of control will depend primarily on the type of raw material. The following parameters of a foodstuff are evaluated:

- appearance,
- colour,
- smell,
- presence of foreign bodies,
- presence of traces of pests,
- presence of other impurities.

Helpful in the field of quality assessment of a foodstuff in the event of non-compliance regarding the quality of raw materials, packaging or means of transport, there may be a description of the requirements given in the raw material specifications, i.e. supplier's internal documents. Plenipotentiaries of the food quality and safety system should be notified in such a situation to make a risk assessment. Only he can make a decision on conditional acceptance despite not meeting the specified requirements, immediate implementation of corrective actions in accordance with the "Procurement, storage and disposal procedure for raw materials and auxiliary materials". The most important information from the point of view of food safety should be recorded in the "Goods Acceptance Control Card", which is proof of due diligence in the area of health and safety of manufactured products.

ISO 22000 standard requires that all organizations in the food chain from feed producers and primary products by manufacturers of food, transport and storage operators and subcontractors, to area retail outlets and food services products described, approved, implemented and applied the following system procedures:

- supervision of documents,
- supervision of records,
- handling of potentially unsafe product,
- withdrawal of the product,
- correction and corrective actions,

- internal audit.

ISO 22000 standard requires that organizations establish and keep records to provide evidence of compliance with the requirements and the evidence of the effective functioning of the system i.e. the fulfilment of the requirements or execution of a specific action must be confirmed by a record. Entries should be simple, unambiguous, not to cause an unnecessary burden on employees such as long page sections filling forms (ISO 22000:2005). The documentation should be drafted with the participation of workers, but it must also be careful not to be excessive, which often happens in many companies.

According to Regulation 178/2000 the food and feed producers are required to implement appropriate procedures for the conduct of the traceability process. The aim of this action is to provide capacity of food, feed location, and determine the path of their movement within the whole food chain, ranging from where was purchased raw material to whom the product was delivered to. Information about the movement must be maintained in order to be making it available to the competent authorities (KIJOWSKI J. 2007).

Meeting the requirements of Article 18 of Regulation 178/2000 the poultry plant has developed a procedure for the traceability of manufactured goods down the rules for the monitoring of raw and auxiliary materials (list of suppliers), and also labelling the finished product, which is passed on to customers. In order to identify raw materials, auxiliary materials and others that have direct or indirect contact with the product produced, the poultry plant has compiled the following lists of (COMPANY MATERIALS. 2007):

- chicks suppliers,
- poultry suppliers for slaughter,
- suppliers of poultry carcasses and parts (goods and raw materials for production),
- suppliers and the packaging unit and other materials for production,
- suppliers of chemicals for cleaning and disinfection and other material,

- suppliers of work wear and other materials for social needs,
- companies with which the poultry plant cooperates.

In the range of identification of products and auxiliary materials in the company was systematically carried out full identification of the produced product. From a label on the product based on the production code could be read from which production order comes the product, while used in its production materials were identified by the date of delivery of these materials. As regards the recipient's identification of finished products the Company carries lists of (COMPANY MATERIALS. 2007) recipients of finished products and waste recipients regarding the applicable regulations. In the case of products, potentially inconsistent identification may occur through:

- control (self-control) of persons involved in the production process and internal control,
- client claims,
- annulment or withdrawal of the product by the supervisory authorities (only an administrative decision).

In the case of obtaining information about potentially unsafe product manufactured by the poultry plant appearing on the market, the plant initiates the withdrawal of the product from the market in accordance with the procedure - Withdrawal of product from the market, and then takes decisions on product development.

The product is potentially unsafe when it does not meet the established requirements and, consequently, may constitute a risk to life and health of the consumer. In the process of poultry production, we have to do with potentially incompatible product when control limits are exceeded for the designated CP and CCP, in such case, there must be immediately taken steps to reduce food safety hazards to acceptable levels. When the process parameters are reset, the product must be challenged to assess relief to pass on to the next stage of production.

Each lot of product affected by the nonconformity shall only be released as safe when any of the following conditions apply (ISO 22000:2005):

- evidence other than the monitoring system demonstrates that the control measures have been effective,
- evidence shows that the combined effect of the control measures for that particular product complies with the performance intended,
- the results of sampling, analysis and/or other verification activities demonstrate that the affected lot of product complies with the identified acceptable levels for the food safety hazards concerned.

3.4 Conclusion

Safe food production has become not only a priority requirement for the food chain, but also the rights for consumers in recent years. The current food market is characterized by strong competition. Production of safe food is a necessary requirement for the domestic and foreign manufacturers. The importance of food safety increases substantially among companies. Gradually, food companies are acknowledging that implementation of an effective food safety and quality management system is very important.

This chapter presents food safety management system according to ISO 22000 in the selected poultry food plant in Poland. This publication describes the prerequisite program, the operational prerequisite program with particular emphasis on Control points (CP) and Critical Control Points (CCP). Qualification and evaluation of suppliers, quality control of raw materials and goods processed were also presented.

Described company, successfully passed certification audit receiving a certificate of ISO 22000 for three years, thanks to it, extended cooperation with foreign partners and increased exports of its products.

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REGULATION (EC) NO 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for on the hygiene of foodstuffs.

Chapter 4

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TRANSFORMATION PROCESS AND SERVICE SECTOR IN V4 COUNTRIES

Abstract: The current institutional environment of the V4 countries is the result of the transformation process i.e. structural way that resulting in dominance of service sector. The aim of the chapter is to identify structural way development of V4 countries from the perspective of Slovak Republic, to characterize the current situation of the institutional and macroeconomic environment and the impact of the environment on the risk assessment of analysed countries. In order to aim verification, we have used the Country Complementarity Index, correlation and regression analysis between The Heritage Foundation's Economic Freedom Index and the Coface Country Risk Rating. The work confirmed the dominance of service sector in the economies and chapter identified the institutional environment determinants that have a significant impact on improving the risk exposure of countries.

Key words: Services, transformation process, new institutional economic theory, index of complementarity, institutional environment

4.1. Introduction and Theoretical Background

In accordance with the new institutional economic theory, the economy of the country achieves higher efficiency in conditions of better-set institutions, which generate lower transaction costs. Socio-technological changes affect the level of transaction costs. The socio-economic system, which is able to take advantage of changes, could reduce transaction costs. That means a good institutional environment supporting economic development.

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The subject of Institutionalisms is institutions, their origin, development, behavioural functions and decision-making of economic subjects (VOLEJNÍKOVÁ J. 2005). The term "institution" generally refers to a social arrangement or rules regulating mutual relationships between individuals or social groups. Generally institutions include organizations of various kinds such as companies, unions, cooperatives, business and industrial associations, state, schools, universities, etc. As institutions can also mark traditions, habits, customs, recognized social group behaviour, stereotypical thinking, or group psychology.

Institutional theory, or original American institutionalism, evolving since the late 19th century in works T. Veblen and J. R. Commons and reflects a wide range of factors affecting the economic performance of subjects. Institutionalism focuses on practical economic problems and recognizes that individual institutions pursue diverse goals and develop according to Darwin's evolutionary theory. The new institutional economic theory is based on institutional and neoclassical economic theory. Represents of this school are for example R. H. Coase, D. C. North, A. A. Alchian, and O. E. Williamson.

The founder of the social-psychological concept of the institution is T. Veblen (VOLEJNÍKOVÁ J. 2005). He saw the main contradiction between the institution of industry and the business institution in the company. Industry understood as a production process that aims to maximize productivity and production. The business was perceived as a business aimed at maximizing profit (LISÝ J. et al. 1996). J. R. Commons, known as the founder of the legal notion of institutionalism characterized institutions as historically variable, sanctioned social standards, which are the product of confrontation of the different interests of various economic groups (VOLEJNÍKOVÁ J. 2005). He emphasized the legal aspect of the institutions, legal standards relating to ownership and ownership transactions (LISÝ J. et al. 1996). Institutions by D. C. North, represent set of formal and informal rules aimed at directing of human behaviour in a certain direction, influencing the behaviour of individuals, and thus reducing uncertainty (VOLEJNÍKOVÁ J.

2005, LIŠKA V. et al 2011). On the basis of "path dependence," states that have once reached the path of economic growth, stagnation or recession will continue in these trajectories for a long time. The reason is slow pace of changes in institutions. In the case of trying to change the current direction of the economy, it is necessary to completely change the structure of the institutions. Not only is the willingness to enforce old laws, but also a change of informal rules of negotiation the market participants (VOLEJNÍKOVÁ J. 2005). The key feature of institutions is the ability to develop. Institutions are not unchanged but result from developments based on people's experience. New forms survive or cease to exist depending on the power and cooperation of social groups as well as on human intelligence. If institutions that have inherited society from the past ceased to meet new economic conditions and needs, they have to adapt or reduce new places (VOLEJNÍKOVÁ J. 2005). Institutions attribute the impact on economic performance. According to J. Tej, as a low rate the economic development of the Slovak regions has a low pace of regional economic growth, which is caused by an inadequately functioning institutional framework, the bearers of institutional quality (TEJ J. 2009). The most influential and most-cited author of this economic science for the last fifty years was R. H. Coase. He tried to link economic analysis to real economic development. New institutional economics offers relevant answers to analyse current issues of current developments, such as ongoing crisis processes or dynamic growth in selected regions of the world.

4.2. Theory of Transaction Costs and its Impact on the Service Sector

Institutional, but especially the new institutional economic school developed the knowledge of transaction costs, which later became established as a separate theory (LIŠKA V. et al. 2011). These costs significantly determine the institutional framework, performance and competitiveness at microeconomic as well as macroeconomic levels. The

amount of transaction costs affects the design of business processes and organizational structure of companies. The expansion of services in advanced economies can be attributed to efforts to optimize the level of transaction costs, notably through the creation of effective mechanisms for managing and controlling transactions of a specific nature. According to author Z. Lokšová, in economics, where markets are working poorly and the costs associated with their use are high, or where markets operate in a deformed form or do not work at all, there is a tendency to include as many activities as possible in one's own organization (in house) (LOKŠOVÁ Z. 2011). In contrast, in economies with advanced market infrastructure, transaction costs are relatively low. There are many specialized providers whose supply exceeds demand. Due to the specialization, the costs are usually lower than if they were organized by the organization itself.

Measuring the amount of transaction costs is not easy. O. E. Williamson points to the difficulty of quantifying the level of transaction costs as one of the major weaknesses of the theory (WILLIAMSON O. E. 1990). Transaction costs significantly determine the institutional framework, performance and competitiveness at microeconomic as well as macroeconomic levels. The amount of transaction costs is influenced by the business process design or organizational structure of enterprises.

According to V. Liška, together with the authors' college, the issue of transaction costs is being developed by institutional economists, especially new institutionalists, for more than a century. The focus on transactions as a subject of economic exploration was provided by J. R. Commons, but a significant contribution to the theory of transaction costs represented the ideas of R. H. Coase, which predicted a correlation between the level of transaction costs and the existence of companies: "*To determine the size of the firm, we have to consider the marketing costs (that is, the costs of using the price mechanism) and the costs of organizing of different entrepreneurs and then we can determine how many products will be produced by each firm and how much of each it*

will produce (COASE R. H. 1937).” O. E. Williamson links transaction costs with the implementation of a certain governance and control structure, governance structures that manage transactions of a specific nature and compare these costs to mechanical train.

J. J. Wallis and D. C. North first measured transaction costs in the US economy for the period 1870-1970. According to the authors, transaction costs cover the cost of labour, land, capital and business skills in the exchange. From producers' view, manufacturer deal with costs, which the company would not have counted if they traded this goods himself. Costs that are not included in the costs of the producers are again transaction costs on the demand side (WALLIS J. J., NORTH D. C. 1986).

From the point of view of future development the size of transaction costs V. Baláž assumes that even within this group of costs, heterogeneous development will occur: "*It is true that due to the development of new technologies and organizational innovations (platform economics), and also through free trade agreements, transaction costs in trade in goods and services have fallen dramatically. Transportation a container with goods from China, respectively order taxi or hotel abroad, or trade on the stock exchange over the internet is today much cheaper than before. On the other hand, transaction costs resulting from regulation increased. The economy today is much more complicated and influenced by increase the number of different prescription, rules and regulation. This also brings additional to growth of transaction costs* (BALÁŽ V. 2016 in STEINHAUSER D., ČUKANOVÁ M. 2016)." Increasing requirements of the implementation new corporate processes in the form of cooperation can also be perceived to protect property rights through the use of outsourcing and offshoring.

Most organizations are not completely self-sufficient, they do not have unlimited resources, but most organizations have unlimited needs. In the microeconomic theory, there are several approaches, which point to the ability to overcome various constraints and low efficiency through outsourcing - Outsource Resource Using. It is the decision between the two strategies "Make or buy" either to produce in their own direction or

to take delivery. The fundamental difference between outsourcing and the simple purchase of a particular service or commodity is the long-term relationship between the client and the outsourcing provider (DVOŘÁČEK J., TYLL L. 2010). In general, the outsourcing motivation can be summarized in the areas of cost reduction, focusing on core activities and increasing the level of service (DAŇO F. 2010). The real use of outsourcing leads to lower transaction costs, mainly due to the realization of economies of scale on the provider part. However in most cases leads to increased transaction costs associated with negotiating, controlling and managing the outsourcing relationship (DVOŘÁČEK J., TYLL L. 2010).

Abovementioned theories of institutionalists and the theory of transaction costs explain the idea of the establishment firm in connection with the outsourcing of non-specialized activities. We expect that these activities have become the basis for strengthening the importance of the service sector.

Socio-technological changes increase transaction costs that mean they increase the cost of adapting them in production and value chains. However, the adaptation of economic processes to these changes, and the associated specialization, will act to reduce them. This means that countries with lower transaction costs are better adapted to current changes in the society.

4.3. Impact of Institutional Environment on National Risk Ratings

Institutional environment is generating through single institutions. New institutional economic theory considers between formal, informal institutions and organizations (LIŠKA V. et al. 2011). Setting and quality of these institutions creates quality of whole institutional environment (KITTOVÁ Z., STEINHAUSER D. 2017). Z. Kittová and D. Steinhauser separate environment into an institutional and macroeconomic environment. Authors H. Smit, E. Pennings and S. van Bekkum consider between institutional and business environment. "*Transactional*

uncertainty that stems from institutional voids and increases transaction costs and economic uncertainty that arises from the business environment (SMIT S., PENNINGS E., BEKKUM H. 2017)."

R. E. Iloie focused on relationship between corruption perception index, country risk assessment from Coface and foreign direct investments: "*Foreign Direct Investments (FDI) represent one of the most important avenues for an economic system to improve itself and to increase the level of competitiveness… There are several factors that influence this perception; this chapter will focus on two of them the corruption perception index - CPI (data from Transparency International) and the country risk assessment - CRA (data from COFACE)* (ILOIE R. E. 2015)." In environment with high value of transaction costs is higher risk of private entities failures and whole national economies. This risk is measured by risk ratings. For our purpose we consider to use Coface Country Risk Assessment. We expect that higher quality of institutional environment will be accompanied by lower value of risk assessment.

4.4. Methodology of Environment-Risk Research

In this subchapter were applicate descriptive, correlation and regression analysis. Results from quantitative research were interpreted according to statistical literature (PACÁKOVÁ V. et al. 2009; LUKÁČIK M., LUKÁČIKOVÁ A., SZOMOLÁNYI K. 2011). Outputs from analysis were calculated with programs Gretl and Microsoft Excel.

Our aim was to research and interpret relationship between Coface Country Risk Assessment and selected sub-indices of The Heritage Foundation Economic Freedom Index. These two indicators have strong expressing power over environment in countries. We use theoretical approaches of new institutional economic theory and its terminological apparat. From this view of point we discourse over institutional environment. The low level of transaction costs in the economy is found in a high-quality institutional environment. The institutional environment

and hence indirectly the level of transaction costs is measurable by a higher level of qualitative indices or by indicators of financial and capital market (cf. KITTOVÁ Z., STEINHAUSER D. 2017; STEINHAUSER D. 2015; OKRUHLICA F. 2013b). O. E. Williamson's transaction costs (WILLIAMSON O. E. 1990) represent the friction force in the economy and are different from production costs (LIŠKA V. et al. 2011). Examples of transaction costs include legal services, financial advice, marketing, security services, or environmental services. In a hypothetical environment with a low level of transaction costs we except a lower rate of opportunism, corruption, a lower probability of moral hazard. Then the governing structures that ensure transaction-specific interactions are less costly (lower transaction costs).

In order to apply quantitative methods to analyse risk assessment, we have encoded the scale from 1 to 8 (ratings AA to E). 1 corresponds to the best rating. On the contrary, in the case of an Economic Freedom Index, the higher value of index marks countries with higher economy freedom. A negative parameters or correlation coefficients signs mean that there is an inversely relationship between variables. If any Economic Freedom Sub-index improves, we expect better Country Risk Assessment. Because of the fast dynamics and the timeliness of the risk assessment, we do not apply any time displacement of variables (lags). Period of The Heritage Foundation Economic Freedom Index is: „*For the current Index of Economic Freedom, scores are generally based on data for the period covering the second half of 2015 through the first half of 2016. To the extent possible, the information considered for each variable was current as of June 30, 2016. It is important to understand, however, that some component scores are based on historical information. For example, the monetary freedom component uses a three-year weighted average rate of inflation from January 1, 2013, to December 31, 2015* (THE HERITAGE FOUNDATION 2017b)." We used cross-sectional dataset from Coface and The Heritage Foundation. Due to omitted observations we focused on 153 countries (table 4.1).

Table 4.2 shows analysis components and description of variables. Country risk assessment from Coface is dependent variable and The Heritage Foundation Economic Freedom sub-indices are independent variables.

Table 4.1. Omitted observations

Omitted The Heritage	**Omitted COFACE**	
Iraq	Bahamas	Kosovo
Korea, North	Barbados	Lesotho
Libya	Belize	Macau
Liechtenstein	Bhutan	Micronesia
Somalia	Brunei Darussalam	Saint. Lucia
Syria	Burma	Saint. Vincent and the Grenadines
Yemen	Comoros	Samoa
	Dominica	Seychelles
	Equatorial Guinea	Solomon Islands
	Fiji	Swaziland
	Gambia	Tonga
	Guinea-Bissau	Turkmenistan
	Kiribati	Vanuatu

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Table 4.2. Dependent (DV) and independent variables of country risk analysis

Variables	**Description of variables**
COFACE_RISK_2017 (DV)	Country Risk Assessment published from private insurance Coface retrieved from homepage on September, 21 2017.
Economic_Freedom_2017	Overall score of The Heritage Foundation Economic Freedom Index from 2017 report.
Property_Rights_2017	"*… country's legal framework allows individuals to freely accumulate private property, secured by clear laws*

	that are enforced effectively by the government."
Judicial_Effectiveness_2017	„*... component is derived by averaging scores for the following three sub-factors, all of which are weighted equally: 1. Judicial independence; 2. Quality of the judicial process; 3. Likelihood of obtaining favourable judicial decisions*."
Government_Integrity_2017	"*… averaging scores for the following six sub-factors, all of which are weighted equally: 1. Public trust in politicians; 2. Irregular payments and bribes; 3. Transparency of government policymaking; 4. Absence of corruption; 5. Perceptions of corruption; 6. Governmental and civil service transparency*."
Tax_Burden_2017	„*The component score is derived from three quantitative sub-factors: 1. The top marginal tax rate on individual income, 2. The top marginal tax rate on corporate income, and 3. The total tax burden as a percentage of GDP*."
Gov't_Spending_2017	"*… component captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs*."
Fiscal_Health_2017	"*Widening deficits and a growing debt burden, both of which are caused by poor government budget management, lead to the erosion of a country's overall fiscal health. Deteriorating fiscal health, in turn, is associated with macroeconomic instability and economic uncertainty*."
Business_Freedom_2017	"*The score is based on 13 sub-factors… : 1. Starting a business—procedures (number); 2. Starting a business—time (days); 3. Starting a business—cost (% of income per capita); 4. Starting a business—minimum capital (% of income per capita); 5. Obtaining a license—procedures (number); 6. Obtaining a license—time (days); 7. Obtaining a license—cost (% of income per capita); 8. Closing a business—time (years); 9. Closing a business—cost (% of estate); 10. Closing a business—recovery rate (cents on the dollar); 11. Getting electricity—procedures (number); 12. Getting electricity—time (days); 13. Getting electricity—cost (%*

	of income per capita)."
Labor_Freedom_2017	"*… component is a quantitative measure that considers various aspects of the legal and regulatory framework of a country's labour market, including regulations concerning minimum wages, laws inhibiting layoffs, severance requirements, and measurable regulatory restraints on hiring and hours worked, plus the labour force participation rate as an indicative measure of employment opportunities in the labour market.*"
Monetary_Freedom_2017	"*… combines a measure of price stability with an assessment of price controls. Both inflation and price controls distort market activity. Price stability without sector-specific government intervention is the ideal state for the free market.*"
Trade_Freedom_2017	"*Trade freedom is a composite measure of the extent of tariff and nontariff barriers that affect imports and exports of goods and services. The trade freedom score is based on two inputs: 1. The trade-weighted average tariff rate and 2. Nontariff barriers (NTBs).*"
Investment_Freedom_2017	"*In an economically free country, there would be no constraints on the flow of investment capital. Individuals and firms would be allowed to move their resources into and out of specific activities, both internally and across the country's borders, without restriction*."
Financial_Freedom_2017	"*… is an indicator of banking efficiency as well as a measure of independence from government control and interference in the financial sector. State ownership of banks and other financial institutions such as insurers and capital markets reduces competition and generally lowers the level of access to credit*."
GDP_PC_PPP_2017	Gross Domestic Product on one person in purchase power parity in USD from 2017 The Heritage Foundation Economic Freedom Index.

Source: COFACE 2017; THE HERITAGE FOUNDATION 2017b

4.5. Results of Quantitative Analysis between Risk Assessment and Institutional Environment

Table 4.3 shows descriptive statistics (mean, standard deviation, coefficient of kurtosis and skewness) and correlation analysis (r) between variables of Economic Freedom sub-indices, GDP and Country Risk Assessment. Positive coefficient of skewness, that means right sided asymmetrical division of observations entails, that in most observation was the value of variable smaller than average. Coefficient of kurtosis higher than 1 means that in statistical dataset were observed extreme values higher than normal distribution.

Table 4.3. Descriptive statistics and correlation analysis, N = 153

	Mean	**St. Dev.**	**Kurt.**	**Skew.**	**r (X; Y)**
COFACE_RISK_2017	5,01	1,89	-0,76	-0,39	1
Property_Rights_2017	53,82	20,63	-0,54	0,15	**-0,85**
Judicial_Eff_2017	46,10	21,06	-0,79	0,31	**-0,77**
Gov't _Integrity_2017	43,98	19,27	-0,16	0,85	**-0,82**
Tax_Burden_2017	77,09	12,07	0,64	-0,70	0,35
Gov't_Spending_2017	63,96	22,46	0,30	-0,85	0,41
Fiscal_Health_2017	67,13	29,54	-0,52	-0,85	-0,21
Business_Freedom_2017	65,41	14,97	0,11	-0,28	**-0,63**
Labor_Freedom_2017	58,66	14,12	-0,26	0,03	-0,29
Monetary_Freedom_2017	76,67	9,32	10,85	-2,31	**-0,56**
Trade_Freedom_2017	77,03	10,21	-0,13	-0,83	**-0,67**
Invest_Freedom_2017	58,92	22,60	0,09	-0,83	**-0,65**
Financial_Freedom_2017	50,33	19,28	-0,42	-0,24	**-0,75**
Gov't_Exp_%_GDP_2017	33,33	11,33	-0,46	0,27	-0,37
GDP_PC_PPP_2017	20116,79	21038,59	5,72	1,97	**-0,70**

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Correlation coefficients predict about linkage and direction of relations between independent variables and dependent variable. Positive coefficients mean that with higher value of independent variable will increase value of dependent variable (deteriorating of risk assessment). We expect negative values of coefficients. Higher value of correlation coefficient marks stronger linkage between variables. Correlation coefficients are in interval from <-1 to 1>.

All statistical significant correlation coefficient have expected negative signs. We established strong linkage between property rights, judicial effectiveness, government integrity, financial freedom and GDP per capita. Whit increases this variables we expect better risk assessment. Weaker linkages were calculated by business freedom, monetary, trade and invest freedom. Other coefficient were statistical insignificant.

Based on the correlation analysis, we chose to regression analysis only applicable variables (bold). We have used a linear multi-regression analysis. Model as whole was statistical significant. According R-squared regression – regression equation explains 79,33 % of observations and Ramsey RESET test indicates good specification of variables. There is no other variable that would fundamentally alter the verbosity of the model. Statistical significant were 6 variables. With 99 % probability were estimated parameters by government integrity, logarithm with base 10 of GDP p. c. and constant. With 95 % probability were calculated parameters by property rights and business freedom. With 90 % statistical significance was estimated only one parameter by financial freedom. Other parameters were statistical insignificant.

By increasing of property right by 1 unit model adjust increase of risk assessment by 0,0241 units. This value has a very small impact on the country's risk assessment. We explain this fact, that a whole numbers of determinants have impact on country risk assessment and the property rights sub-index is only a partial area. However, direction of influence is interesting. This supports our assumption that with improving of institutional environment quality is expected improvement in risk

perception. In other words, country with qualitative better environment would achieve better rating in risk assessment.

Table 4.4. Regression statistics, N = 153

Model: OLS, using observations 1-153
Dependent variable: COFACE_RISK_2017

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	12,0227	1,3163	9,1333	<0,0001	***
Property_Rights_2017	−0,0241	0,0104	−2,3068	0,0225	**
Judical_Effectiveness_2017	−0,0095	0,0076	−1,2515	0,2128	
Gov't _Integrity_2017	−0,0250	0,0091	−2,7569	0,0066	***
Gov't_Spending_2017	0,0013	0,0038	0,3324	0,7401	
Business_Freedom_2017	0,0187	0,0081	2,3095	0,0224	**
Monetary_Freedom_2017	−0,0140	0,0112	−1,2562	0,2111	
Trade_Freedom_2017	−0,0039	0,0116	−0,3472	0,7290	
Investment_Freedom_2017	−0,0064	0,0057	−1,1167	0,2660	
Financial_Freedom_2017	−0,0144	0,0077	−1,8745	0,0629	*
log_GDP_PC_PPP_2017	−0,3237	0,1089	−2,9729	0,0035	***

R-squared	0,7933	**Adjusted R-squared**	0,7787
F(10, 142)	54,4895	**P-value(F)**	1,21e-43
RESET test P(F(2, 140) > 0,6920)	0,5023	**Critical value t(142) right-tail probability = 0,025**	1,9768

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Estimation of parameter by government integrity (-0,025) has similar value and direction of influence on dependent variable as property rights. Sub-index business freedom has unexpected positive sign (parameter 0,0187). This estimation is in opposite position with correlation analysis (r = -0,63). Financial freedom achieves good influence-direction. Variable GDP, p. c. as logarithm with base 10 has highest value

of parameter (-0,3237). Countries with higher gross domestic product per capita achieve better risk rating.

Figure 4.1 shows actual and predicted values of dependent variable (country risk assessment) and show feasible specification of model.

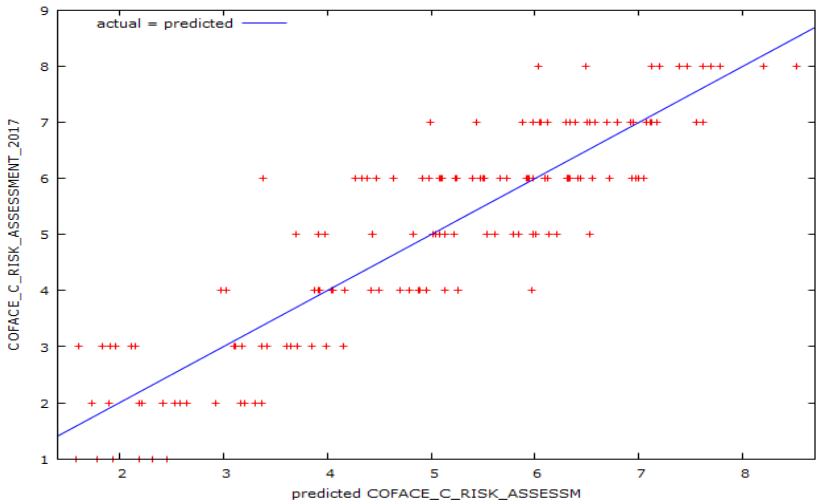

Fig. 4.1. Actual and predicted dependent variable

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Coefficient confidence intervals are in table 4.5. This table shows statistical possible range of parameters-estimations.

General analysis verified aim of subchapter and supported our presumption, that countries with qualitative better economic freedom score and higher level of gross domestic product achieve better risk perception. These results from general correlation and multiple regression analysis per 153 countries allows to applicate concrete indications on selected countries. Table 4.6 shows values of Coface Country Risk Assessment, overall score and sub-indices of The Heritage Economic Freedom and gross domestic product of V4-Countries (Czech Republic,

Hungary, Poland and Slovak Republic) inclusive Germany as control observation.

Table 4.5. Coefficient confidence intervals, t(142, 0,025) = 1,977

Variable	Coefficient	95 confidence interval
const	12,0227	(9,42050, 14,6249)
Property_Rights_2017	-0,0240979	(-0,0447483, -0,00344754)
Judical_Effectiveness_2017	-0,00948499	(-0,0244670, 0,00549698)
Government_Integrity_2017	-0,0250194	(-0,0429594, -0,00707940)
Govt_Spending_2017	0,00127941	(-0,00632929, 0,00888810)
Business_Freedom_2017	0,0187305	(0,00269786, 0,0347632)
Monetary_Freedom_2017	-0,0140316	(-0,0361124, 0,00804913)
Trade_Freedom_2017	-0,00387177	(-0,0259167, 0,0181731)
Investment_Freedom_2017	-0,00639846	(-0,0177248, 0,00492784)
Financial_Freedom_2017	-0,0143774	(-0,0295395, 0,000784774)
l_GDP_PC_PPP_2017	-0,323720	(-0,538977, -0,108462)

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Best risk assessment and overall Economic Freedom Index have Germany. This country has also highest output of economy (GDP). Germany has in most of the sub-indices best results compared with other measured countries, except for tax burden, government spending, fiscal health, labour, monetary and financial freedom. The second best rating (COFACE_RISK_2017) was achieved by the Czech Republic. Czech Republic reached second best overall Economic Freedom score. Then follow Poland, Slovak Republic and Hungary. Contrary to the conclusions of the general analysis, Slovakia has achieved a higher GDP per capita, but compared with Poland and Hungary it has a worse rating of economic freedom.

Table 4.6. Variable values of selected countries

Variables	Germany	Czech Republic	Hungary	Poland	Slovak Republic
COFACE_RISK_2017	A1	A2	A4	A3	A3
Economic_Freedom_2017	73,80	73,34	65,79	68,26	65,73
Property_Rights_2017	82,91	70,33	60,14	60,80	69,03
Judical_Effectiveness_2017	79,55	55,89	51,80	58,01	38,05
Government_Integrity_2017	77,74	55,86	41,54	55,46	39,60
Tax_Burden_2017	61,91	82,92	79,30	75,97	79,70
Gov't_Spending_2017	41,36	45,33	25,35	46,94	47,16
Fiscal_Health_2017	89,92	92,04	79,26	76,07	82,90
Business_Freedom_2017	86,60	67,20	64,00	67,80	64,90
Labor_Freedom_2017	42,83	77,72	64,43	61,46	54,39
Monetary_Freedom_2017	85,86	85,83	91,71	84,67	81,08
Trade_Freedom_2017	86,98	86,98	86,98	86,98	86,98
Investment_Freedom_2017	80,00	80,00	75,00	75,00	75,00
Financial_Freedom_2017	70,00	80,00	70,00	70,00	70,00
GDP_PC_PPP_2017	46893,20	31549,50	26222,00	26455,30	29720,10

Source: Own processing COFACE 2017; THE HERITAGE FOUNDATION 2017a

Hungary has lowest level economic outputs, only 26 222 USD on one person. At the same time, the country has the worst risk rating from selected countries. Hungary reached better score in economic freedom as Slovak Republic and from all sub-indices has Hungary top position in monetary freedom.

The analysis of the state of environment in one year represents a stationary approach. Examining of the environment state in time enables us to achieve dynamic approach. In addition to economic freedom, we have extended the analysis with additional variable - GINI Index. "*Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal*

distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality (THE WORLD BANK, 2017)." The GINI Index did not provide a sufficiently long and continuous time series of observations, so we decided to compare the Economic Freedom Index and the GINI Index using a graphical method.

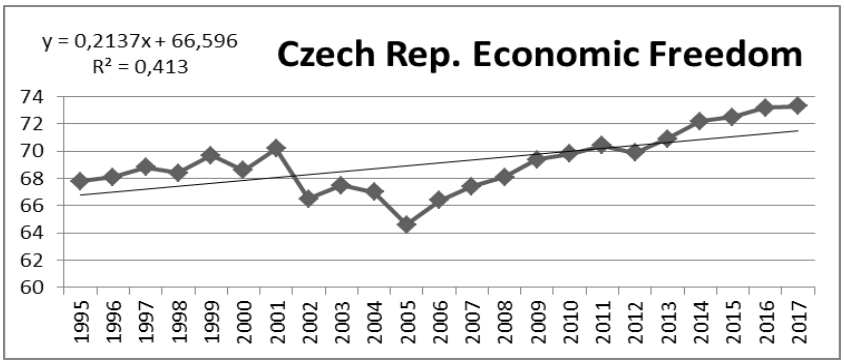

Fig. 4.2. Development of economic freedom of Czech Republic

Source: Own processing THE HERITAGE FOUNDATION 2017c

The lowest value of The Heritage Foundation Economic Freedom Index of the Czech Republic was achieved in 2005 (fig. 4.2). The country bounced from this low and followed increasing of index since 2012. This year saw a slight decline. Then the timeline shows a continuous growth since present. Regression equation explains ca. 40 % of observations and for year 2018 we predicted value of economic freedom on 71,7 points. For year 2019 we except 71,9 points.

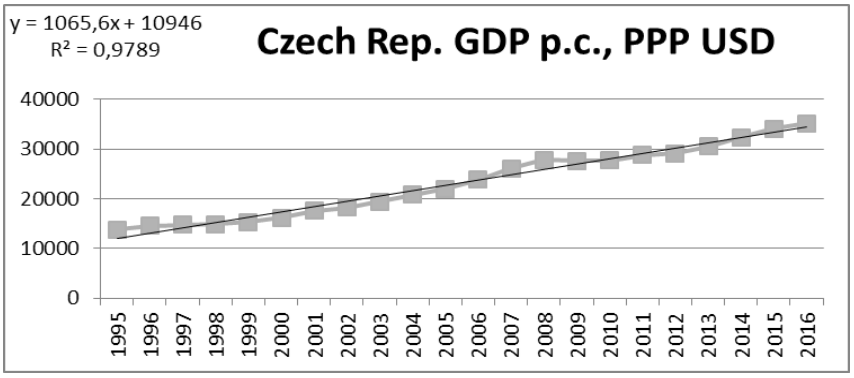

Fig. 4.3. GDP of Czech Republic

Source: Own processing THE WORLD BANK, 2017

GDP of Czech Republic is displayed on figure 4.3. In the period between 1995 and 2016, the country achieved economic growth with a recession between years 2008 and 2009. The trend line explains almost 98 % of observations, with an expected year-on-year growth of 1066 USD. For year 2018 is modelled GDP p. c., PPP on 36 520 USD and for year 2019 on 37 586 USD.

GINI Index of Czech Republic shows figure 4.4. Contrary to Germany is Czech Republic more equally. Our regression line determinate only 35,56 % of dataset. This state results from missing observations.

Figure 4.5 shows values of Hungary economic freedom. The growth and fall phases are alternating, but regression equation explains as much as 68,47 % of observations. Figure displays light decreasing trend of economic freedom from 2013 to present time but long-time trend tends to growth. For 2018 we calculated predicted value on level 69,56 points. For 2019 score 70,05.

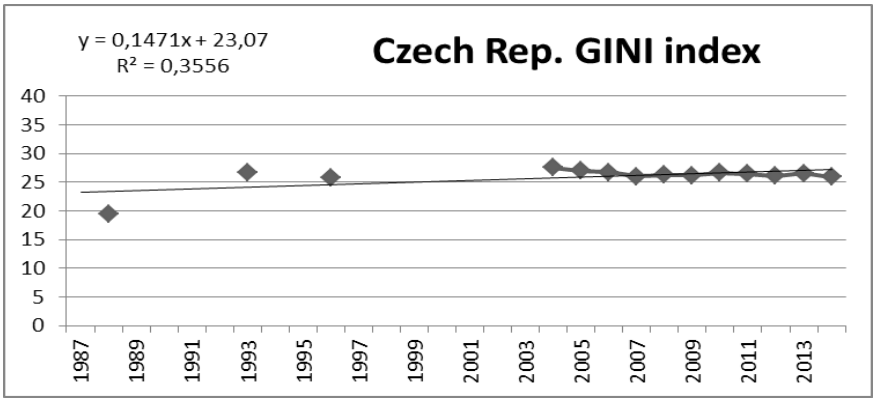

Fig. 4.4. GINI Index of Czech Republic

Source: Own processing THE WORLD BANK, 2017

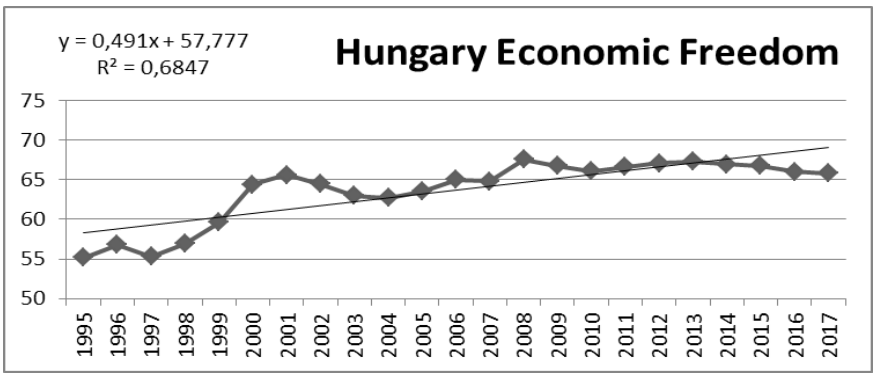

Fig. 4.5. Development of economic freedom of Hungary

Source: Own processing THE HERITAGE FOUNDATION 2017c

Development of Hungarian GDP on figure 4.6. shows similar course and trend as in Czech Republic. The trend line explains 99 % of whole dataset, with an expected yearly growth of 912 USD. For year 2018 is modelled GDP on value 29 050 USD and for year 2019 on 29 963 USD.

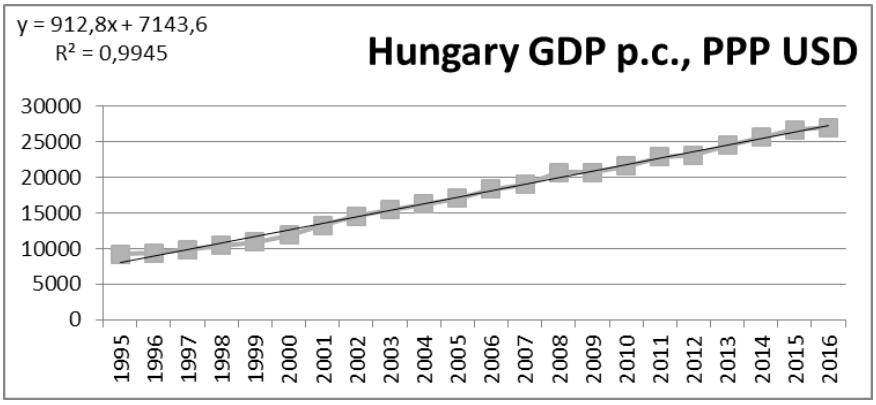

Fig. 4.6. GDP of Hungary

Source: Own processing THE WORLD BANK, 2017

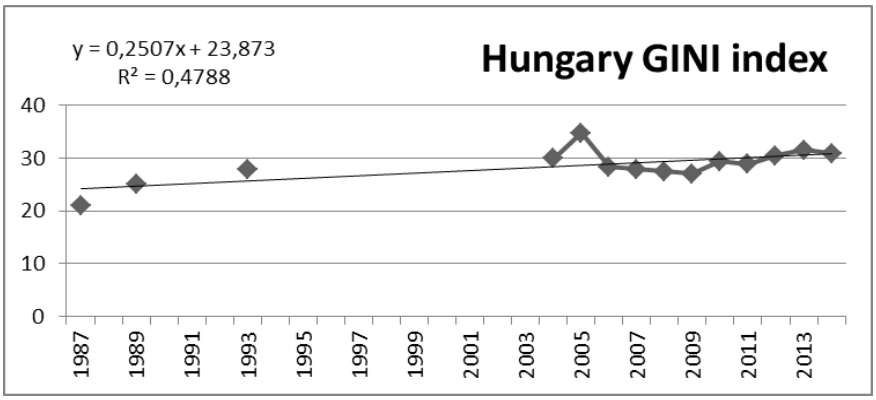

Fig. 4.7. GINI Index of Hungary

Source: Own processing THE WORLD BANK, 2017

Figure 4.7 shows GINI Index of Hungary. In period 2003 to 2006 we observed peak in index. The inequality grew in this period. This worsening of state is not to see on curve of economic freedom. Regression equation explains only 47,88 % of time series.

Economic freedom of Poland is in figure 4.8. This curve has also a long-term growing trend, but between 2016 and 2017 we saw a slight

decline in economic freedom. From 2002 to 2008 we observed the reduction of values. Coefficient of determination tells about 69,11 % of the modelled line explanatory power. For year 2018 is expected score 68,23 points.

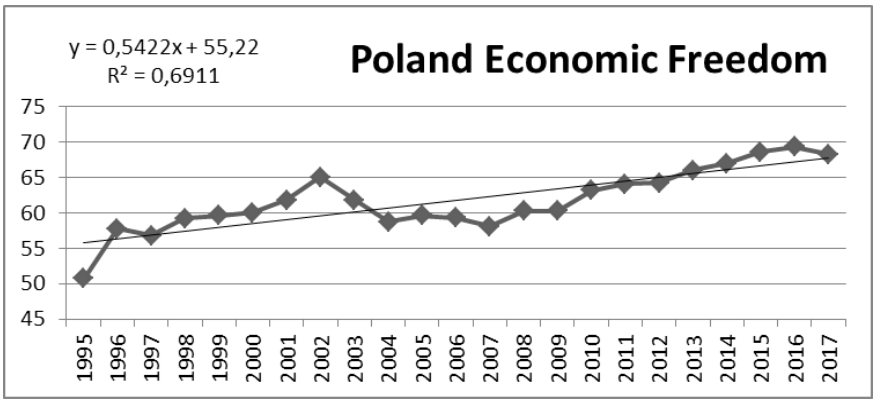

Fig. 4.8. Development of economic freedom of Poland

Source: Own processing THE HERITAGE FOUNDATION 2017c

In opposite to GDP time series of the Czech Republic and Hungary, the Republic of Poland reached on figure 4.8 a lower GDP growth than the modelled trend-line between years 2002 and 2007. The regression trend line explains 97 % of observations, with a calculated year-on-year growth of 1011 USD. For year 2018 is calculated GDP p. c. on value 28 998 USD and for year 2019 on 30 010 USD.

Figure 4.9 shows GINI Index of Poland. The inequality is decreasing since 2014. Coefficient of determination is very low, due to interrupted time series of observed dataset.

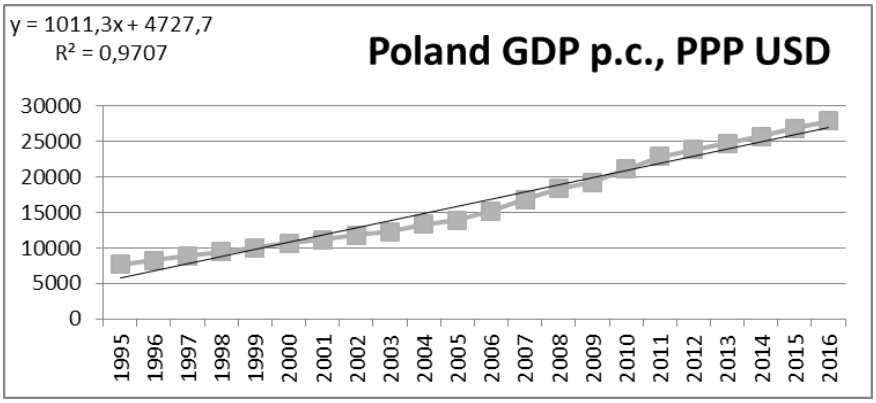

Fig. 4.8. GDP of Poland

Source: Own processing THE WORLD BANK, 2017

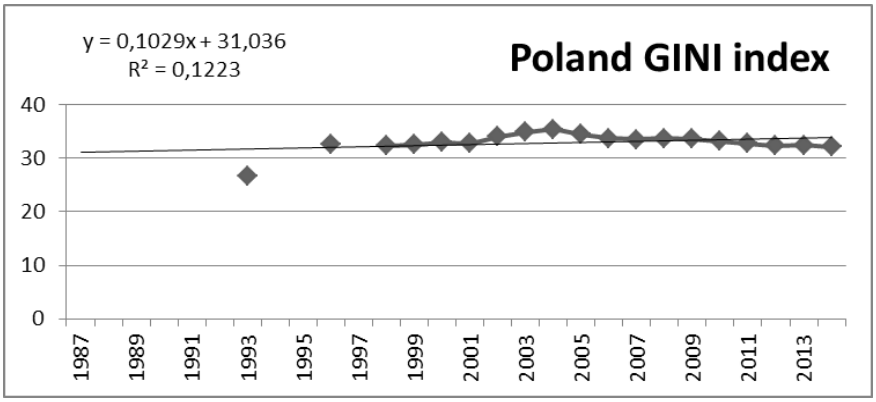

Fig. 4.9. GINI Index of Poland

Source: Own processing THE WORLD BANK, 2017

Time trend economic freedom of Slovakia shows high rate of variability. To year 2000 Slovakia has interannual worsening of economic freedom state. From 2000 to 2006 had country growth of values, but from 2006 to 2011 Slovakia had stagnation, or more precisely deterioration of economic freedom. This trend continues to the present. The best situation from observed years was 2005. Long-

term trend is rising, but only 58,85 % from dataset were explained by regression line and equation. For 2018 is calculated score on level of 71,44 points and for 2019 on 72,08 points. But after graphical results compare of regression analysis in figure 4.10, we expect, that in the next years the economic freedom will reduce to ca. 65 points.

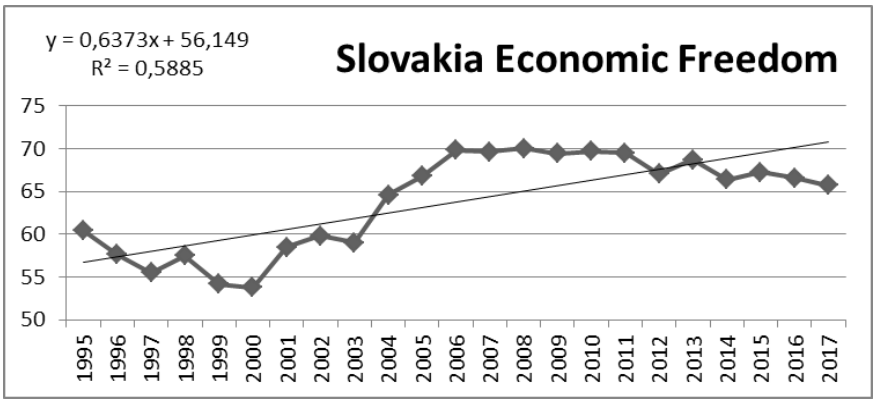

Fig. 4.10. Development of economic freedom of Slovakia

Source: Own processing THE HERITAGE FOUNDATION 2017c

Fig. 4.11. GDP of Slovakia

Source: Own processing THE WORLD BANK, 2017

Development of Slovak GDP shows growing trend with recession between years 2008 and 2009. This trend shows figure 4.11. Underline values achieved Slovak Republic in period from 1999 and 2006. Coefficient of determination of trend line explains 97 % of observations, for year 2018 was calculated value of GDP on level of 33 334 USD and for year 2019 on 34 495 USD. Interannual growth is modelled on 1160 USD.

Slovak GINI Index has slight increasing trend (fig. 4.12). Since 2012, the Slovak Republic has noted, despite this growing trend, the reduction of inequality in society.

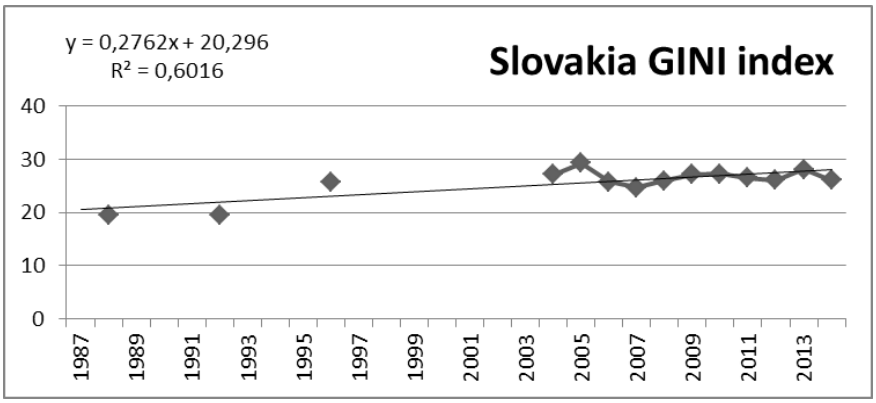

Fig. 4.12. GINI Index of Slovakia

Source: Own processing THE HERITAGE FOUNDATION 2017c

The Heritage Economic Freedom Index in Germany demonstrations in figure 4.13. strong rising trend. Regression trend line explains 69 % of observations based on coefficient of determination and interannual change is excepted as growth over 0,32 points. This means that every three years we can assume an increase in the index value by one point. But between years 2016 and 2017 we observed light decreasing of state. In year 2018 we predicted score of index on 74,09 points and in year 2019 - 74,41 points.

Similar to the other observed countries has Germany rising trend of GDP. Yearly-change is modelled on value 1282 USD. Trend line determinates 97 % of observations. We expected value of GDP for year 2018 on 50 735 USD and for year 2019 on 52 018 USD. Time series of GINI Index has very low number of observations, for this reason we can't used figure. In year 2013 had Germany 31,4 points of GINI Index.

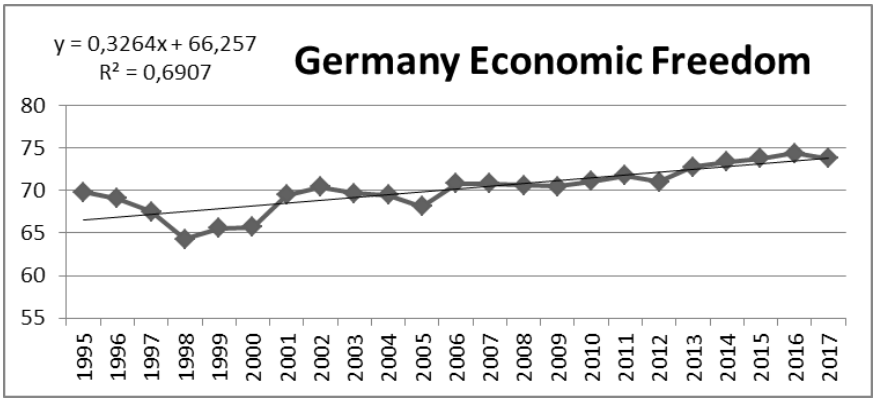

Fig. 4.13. Development of economic freedom of Germany

Source: Own processing THE HERITAGE FOUNDATION 2017c

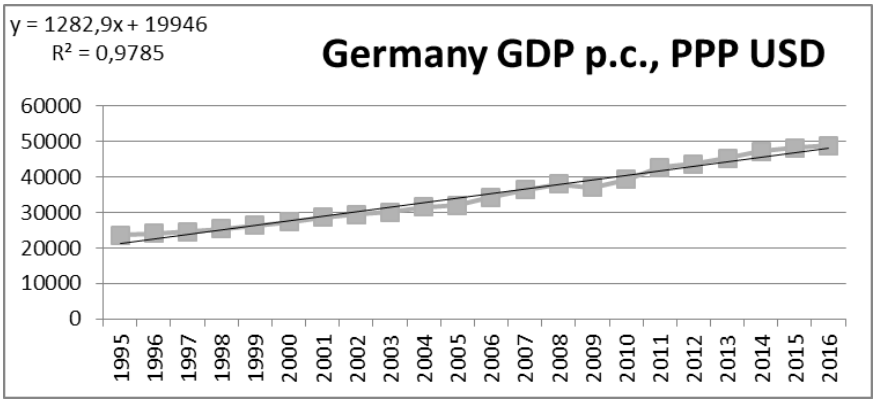

Fig. 4.14. GDP of Germany

Source: Own processing THE WORLD BANK, 2017

4.5.1. Transformation Process of V4 Countries

The policy of austerity, liberalization, deregulation and privatization are four aspects which formed the V4 countries for the past 30 years (THER PH. 2016). The move from centrally planned to market economy has affected not only in V4 countries but in Central, Eastern Europe and Asia. This process was unique in the world economic theory and there were no previous experiences with it. While the first part of the transformation took place quickly, the second part, which constituted a functioning market economy, was considerably more complex (BALÁŽ V,. KLUVÁNKOVÁ-ORAVSKÁ T., ZAJAC Š. 2007). The Czech Republic, the Slovak Republic, Hungary have long history, many formal and informal institutions. Culture, religion, customs and traditions are characterized by high degree of inertia and have left substantial feature in this region.

In these countries appeared local variants of capitalism. Selected countries have a very similar character of economy. They are specified as small open economies with high foreign capital penetration. Dependence on foreign capital is high and therefore they have to create a favourable business environment for the foreign investors and a flexible labour market. The most important is the overall tax burden on companies. However, the size of the economy of Slovakia, the Czech Republic or Hungary varies considerably. Poland represents a large centralized country with a traditionally strong role of the state in the economy (BALÁŽ V,. KLUVÁNKOVÁ-ORAVSKÁ T., ZAJAC Š. 2007).

The transformation process was marked by social enthusiasm and optimism (OKRUHLICA F. 2013). Was expected the rapid rise of prosperity, which was typical of advanced capitalist countries. Previously system of centrally planned economic was characterized by a strong state ownership, central political bureaucracy, macroeconomic imbalances and the prevalence of soft budget constraints. Soft budget constraints mean that the microeconomic sphere did not have a direct relationship between resource generation and its effective use. State-owned enterprises pointed out a low performance as a result of conflict of state interests and inadequate corporate governance. The basic philosophy of transitional

reforms was removing of above-mentioned system and moving to a system of market economies with the main features was: *the pluralist system, the prevalence of market coordination over bureaucratic coordination, the macroeconomic balance and the prevalence of budget constraints.* The transformation process in the transitive economies could be done in two ways. First, a rapid change or secondly, a slow gradual change. The Czech and Slovak Republics (at that time Czechoslovakia) and Republic of Poland determined the speed of transformation as a priority objective. Hungary has been more focused on the gradual privatization and maximization of revenues from the sale of state property.

According to J. Tej in professional practice more and more attention is paid to clarification of long-term economic performance at macroeconomic and microeconomic level. In terms of the Slovak Republic the problems of low social and the economic development of lagging regions are attributed to the low rate of regional economic growth, due to the disproportionately functioning institutional framework, which is the recipient of institutional quality. At present, there is an increasing interest in the recognition of the influence of institutional factors on the basis institutional and new institutional economic theory (TEJ J. 2009; KAČÍRKOVÁ M. 2009). For the last two decades, the Slovak Republic has experienced changes in the institutional framework. Economic reforms in all post-communist states focused on the retreat of the state, which mean, that all sectors of the economy were to be privatized … and in the next step, even the social security system and thus central state authority (THER PH. 2016). There have been structural changes in the economy as demonstrated by the growing importance of Knowledge-intensive Services (KIBS). In the 1990s, these services absorbed the largest part of total employment growth and added value and also played a major role in economic growth in transit countries (BALÁŽ V,. KLUVÁNKOVÁ-ORAVSKÁ T., ZAJAC Š. 2007). On the other hand, the disappearance of industries because of the collapse of

the Council for Mutual Economic Assistance (CMEA) and the outlets on the East caused that engineering plant met with serious difficulties.

The liberalization of foreign trade has forced the factory to compete immediately with the West. In many cases it has led to bankruptcy. At the end of the 1990s this wave of deindustrialisation in the Slovak Republic and Republic of Poland increased regional inequality and at the beginning of the new millennium caused it an increase in unemployment reaching up to 20 %. Nevertheless the dynamics of post-communist national economies, foreign direct investment and transfer payments cause upgrading of new and old member states of the European Union (THER Ph. 2016).

In the case of the Czech Republic, Slovak Republic and Republic of Poland, was importance of transformation from the bottom, from society is underlined. The advantage of the V4 states through the "*Détente policy"* was the possibility to establish contacts with Western Europe and to develop the market economy competencies. The nearness of the West in the 1990s they became an advantage for the export of goods and competition for foreign investors (THER Ph. 2016). In the case of Poland, its boom was not the result of "*path dependence"* but a surprise of the transformation process (NORTH, D. C. in LIŠKA V. et al. 2011). The boom of Poland has helped the mass founding of enterprises. The national economy of the Polish type was more oriented to domestic production, and smaller countries as Slovakia was more focus on exports (THER Ph. 2016).

4.5.2. Service Economy as a Result of Increased Demand for Services

Increased demand for services is closely connect with the notable growth of services sector, which is characteristic for recent decades. This is one of the most intensive trends in the economies of the V4 countries. In accordance with Y. Melikhova and collective: "*After several decades of planned economy and manufacturing-oriented economic policy, during*

the last 20 years the V4 countries have been experiencing a shift towards a market economy combined with intensification of services activity (MELIKHOVA Y. et al. 2015)*"*. This is also confirmed by the statistical data regarding employment growth in the service sector and their share in GDP. In the period 1994 – 2015 the employment rate of service sector in the Slovak Republic and Republic of Poland increased approximately 40 %. In Hungary and in the Czech Republic was this rate around 20 % (OECD, 2016). Share of services in GDP of the V4 countries has been represented for more than 60 % in (OECD, 2016; WBG, 2016). It is evident that this sector is of crucial importance for economic growth. Tertiary sector represents the largest and the fastest growing sectors in the world economies in the last two decades (CHAHAL M. 2015; JOSHI S. 2008). Currently, the Slovak economy is experiencing a boost of service sector. Commercial services created 44 % of GDP in Slovak Republic (STATISTICAL OFFICE OF THE SLOVAK REPUBLIC, 2016). However, when compared to the European Union Member States, Slovak republic reports below average results of achieved productivity in services in 2015 (knowledge-intensive and knowledge non-intensive services), in consideration of information and communication services which record the highest productivity in V4 countries (KUBIČKOVÁ V. et al. 2016).

The economic level of the country is not only measured by the gross domestic product (GDP) but also by the structure of their economy, as defined by V. Gavaľová. The member states of European Union is characterized by the modern structure of the economy, which represents the highest level in terms of the classical way of structural economic development, where service dominates (GAVAĽOVÁ V. 2012).

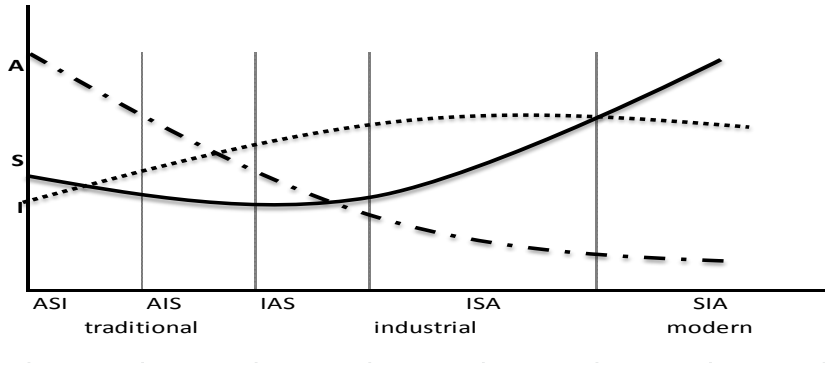

Fig. 4.15. The classic way of structural development

Source: Own processing by EUROEKONOM 2016.

Curves A (primary sector), I (secondary sector), S (tertiary sector) reflect the structural development of economies (Fig. 4.15) and take into account the share of individual economic sectors in GDP (GAVAĽOVÁ V. 2012). According to A. Holub, there are three historical stages of economic development: *traditional, transitional (industrial) and modern* (HOLUB A. 1970). Based on this methodology can we divided the economies into six groups according to the structure of their GDP. Developing countries represents the traditional model of the structure (ASI), where the largest share of the economy has agriculture. However developing countries where the industrialization process is already recorded, represent the AIS model. In this group beginning to produce textiles, leather and industry sector is trigger point in economy structure. The transition stage IAS and ISA models are identified by the largest share of industry in economy. The dominance of the service sector is linked to the third phase of development (CHAHAL M. 2015). Modern economies achieve the largest share of services in the economy structure. It is a model of a modern structure SIA (services - industry - agriculture), which is dominant mostly in the EU and US countries. Despite the fact that the EU countries represent the most advanced structure of the economy (SIA), they have influenced by crises. Former European

Commissioner for Industry and Enterprise Mr F. Feroci saw reindustrialisation of the EU as a way out of the crisis (EUROPEAN COMMISSION, 2014).

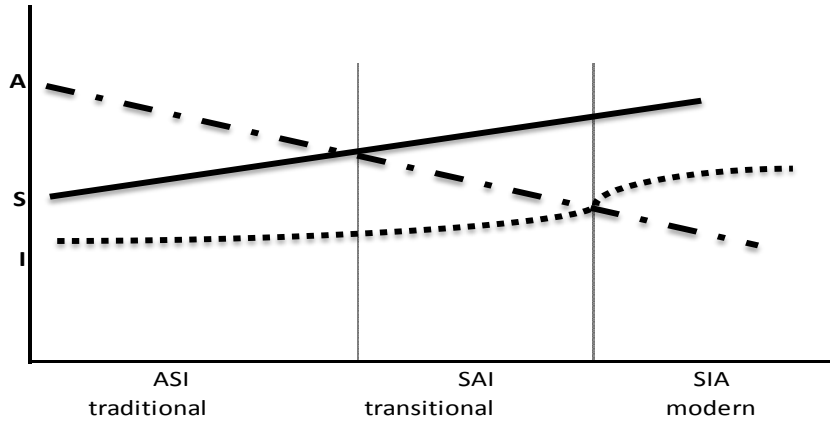

Fig. 4.16. Structural shortcut

Source: Own processing by EUROEKONOM 2016.

The structural shortcut represents an alternative to the classic (also traditional) way of structural development. Due to the low level of the industry, there is a rapid growth in services. Trade are mostly with outputs from the agricultural sector, which has a dominant position (ASI). In this case, the quality of services is less sophisticated than in the traditional structural way, but for the poorly developed agriculture and industry, the share of these services is the most significant (SAI). The next stage of development leads to the development of an industry that is starting to be more intense and more productive than agriculture. The structure of the economy is the dominant service sector, followed by industry and agriculture (SIA). However, this status does not correspond to the final stage of the traditional structural way in its quality. At this point, the structural shortcut ends and the country have to undergo the next industrialization process. That means, strengthening of industrial

production in the country and the industry sector is in first place again (ISA). Services trade is developing, often selling more sophisticated products from the industrial sector. The country is in a developed state (SIA), which is comparable to the developed stage of the traditional structural way (GAVAĽOVÁ V. 2012).

The data comparison of selected EU member countries from figure 4.17 shows that the service sector contributes significantly higher share of total added value than other sector of the economy.

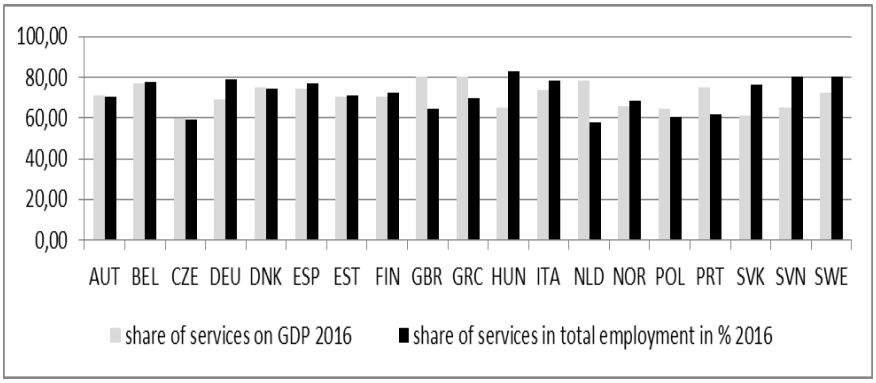

Fig. 4.17. The share of services in total employment and GDP (selected EU countries - 2016 in %)

Source: Own processing by OECD & WBG 2016.

We can identify (Fig. 4.17), that in selected EU countries was recorded the more than half share of services on GDP. The highest share of services in GDP for year 2016 was recorded in the United Kingdom at 80.22 % and the lowest in the Czech Republic - 59.72 %. The share of employment in the service sector on the total employment was also more than half and reflected in all selected countries. The highest share of employment in services for year 2016 was reached in Hungary (82.78 %) and in Sweden (80.52 %). Figure 4.17 also points to the fact, that EU countries are a model of modern structure - SIA. According to O.

Nosáľová, this structure is not a special phenomenon for Slovak Republic economy, because the economy undergone by industrialization phase but the structure of the SIA has been strengthened (NOSÁĽOVÁ O. 2006).

Systematic, technological and organizational changes in advanced economies operate to promote services in the economic processes. One of the key pillars of service sector growth in Slovak republic as well as in V4 countries was a complex process of economic transition. Turning away from the centrally planned economy towards the market economy had also an impact on the service sector. Economic transformation has emphasised the importance of innovation and a necessity for structural industrial changes, job creation, social care, economic growth and international trade (GALLOUJ F., WINDRUM P. 2008). De-industrialisation in economies has been executed via growth in service sector (VINTROVÁ, 1997). The workforce released from the heavy industry sector was partially absorbed by service enterprises (BALÁŽ V,. KLUVÁNKOVÁ-ORAVSKÁ T., ZAJAC Š. 2007). According to team of authors V. Michalová, D. Benešová and J. Šťastná, the position of services in the period of economic transition has especially been noted by the growth of demand for services (MICHALOVÁ V., BENEŠOVÁ D., ŠŤASTNÁ J. 2013). It has also been marked by dependence of business strategy and development in changed economy within the service sector, as in the case of the following activities such as: organisation, storing, financing, and sales, including recycling of both, the products as well as materials.

By replacing central planning with a market mechanism have increased risks, which have to be identified and reduced. So that increased the demand for insurance services. In the period of transformation, in the time of increased risk, uncertainty or vulnerability for all market players, demand for services grew. There has been increasing pressure to link products and services more closely, as well as an increased representation of services in the exchange process in order to gain comparative advantages in terms of intensifying international economic relations and liberalizing trading conditions. There has been an

increase in demand for services, as well as demand for a functional service infrastructure for the correct functioning of the market economy.

Figure 4.18 shows similar developments in employment by sectors in Hungary, the Czech Republic, Republic of Poland and Slovak republic for years 1994 and 2016. There was identifying significant increase in employment mainly in the service sector. Changes in representation of economic activities do not indicate that agriculture and industry are not essential for the economy. However with advances in science, technology and progressive technologies they are becoming more efficient. According to the authors V. Michalová, D. Benešová and J. Šťastná: "*It is more likely that by increasing the capital, qualification and technological content of activities in the manufacturing sector, the share of living labour will be in line with the historical trend to decline.* "

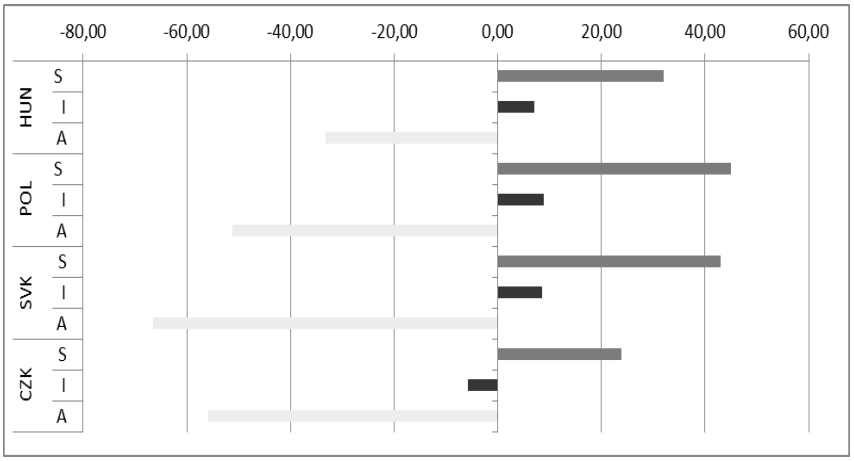

Fig. 4.18. Increases / decreases in employment by sectors in V4 countries. % change for years 1994-2016

Source: Own processing by LABOUR FORCE STATISTICS; OECD 1994 -2016,

Based on data from the Statistical Office of the Slovak Republic we recorded (Fig. 4.19) development changes of individual economy sectors. The significant growth of service sector in the Slovak Republic during the

reform and integration process has changed by crisis in recent years. The effects of the crisis were more pronounced in the fall of GDP in the industrial and agricultural sectors. The faster overcoming of these phenomena was recorded in the service sector (MICHALOVÁ V. & BENEŠOVÁ D. & ŠŤASTNÁ J. 2013).

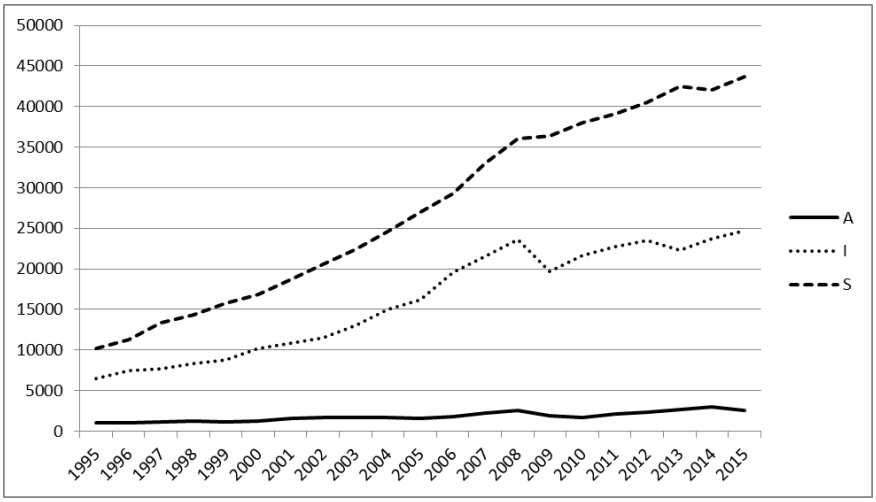

Fig. 4.19. Development of GDP in individual Slovak sectors for years 1995-2015; in mil. EUR

Source: Own processing by Statistical Office of the Slovak Republic 1995-2015.

The prevalence of demand for services in overall demand is a sign of a modern economy. According to V. Michalová, D. Benešová and J. Šťastná , the increasing of the service sector in the economy is the result of several factors. **Demographic factors** such as the aging of the population are related to increasing their demands for health and social care or leisure. It is also a change in people's way of life due to the transfer to cities and urbanized settlements. Cities offer more economic benefits, particularly in the areas of transport, education, delivery speed of new products and services, health care and cultural resources.

Secondly, they are **socio-economic factors**. Here is important to consider especially the growth of financial resources corrected by price growth, the employment of women and the transfer of several activities from the home as an informal economy to the sphere of services as a formal economy. It could be services as catering, childcare or transport services. Similarly, the doubling of household incomes and the associated growth in household service requirements reflected the increased demand for recreational, cultural, entertainment, educational and transport services. Socio-economic factors are also linked to increased mobility of the population in national and international scale, resulting in higher demands of passengers in the transport process, changes in lifestyle diversity and the desire to improve quality of life as a mass phenomenon. This increases the demand for relaxation, sports, recreation and cultural services. In addition, people's ambitions are rising, new demands for lifelong learning and improving knowledge, which is reflected in increased demand for training.

From the **economic changes or factors** affecting demand for services are mainly the globalization of economies and the integration of markets. The growth of cross-border operations increases the demand for communications, information, transport, financial, legal and control services. The liberalization of trade in services removes barriers and stimulates demand for commercial services like international consultancy services and labour mediation. Business specialization in the economy re-enforces requirements for business services such as legal, advisory, and advertising, training, security, or courier services. Service outsourcing supports the demand for services related to business activities and the use of outsourcing and offshoring.

Political and legal factors of demand for services contain factors such as a policy of government in areas such as health protection, education, social care, security, environmental protection, consumer protection. Furthermore, internationalization, the development of international trade, and foreign direct investment in services are causing

the growth of requirements for international legal, consultancy, advisory, government and business services.

4.5.3. International Trade in Services

Trade in services intensiv grew in the decades of the 1970s and 1980s. Service production has long been directed to the domestic market. In the 1980s and 1990s was higher supporting exports of services by governments. Increasing the role of services and their representation in economic development has encouraged by liberalization and its competitive pressure to lower prices. This growth was also influenced by internationalization (better quality of service, cost reduction, greater confidence). International trade in services defined by Manual on Statistics of International Trade in Services 2010 (MSITS, 2010) is the exchange of the same economic values by economic subjects (individuals, businesses, private non-profit organizations and governments) which are located in different countries, through the transfer and independently of the transaction place. It is carried out in 4 ways:

- Cross-border supplying of services.
- Abroad expenditure.
- Commercial presence of the provider.
- Physical presence of individual.

The international trade in services has its own specifics (MICHALOVÁ V., BENEŠOVÁ D., ŠŤASTNÁ J. 2013). First, it requires a large amount of information transfer (banking, insurance, information and consultation services). Secondly, it requires a standing or occasional presence of seller and buyer, which is related to the value and cost of the service. Export of services depends on the ability to come into business relationships and social processes between supplier and consumer at time. The value of service in the consumer's eyes may increase during business. Thirdly, differentiation of products can be a key element of service sector as a supportive trend of their liberalization on the world market. Fourth,

transport costs are a barrier. Fifthly, the relationship between producer and client may depend on the adaptation to local culture. Sixth, foreign direct investment represents an alternative to trade and leads to general welfare.

In order to compare and evaluate services in international trade, they need to be divided into homogeneous groups based on certain common features. Unified procedures for the creation statistics on trade in servicea was published in Manual on Statistics for Services of the United Nations (2002). This is an international recognized classification framework established jointly with institutions such as the WTO, EC, IMF, OECD, UNO, UNCTAD.

Services by UNCTAD are classified into four main categories: goods-related services; transport; travel and other services. Other services are further disaggregated into: construction; insurance and pension services; financial services; charges for the use of intellectual property n.i.e., telecommunications; computer and information services; other business services; personal; cultural and recreational services; government goods and services n.i.e., and services not allocated.

The following fig. 4.20 identify the structure of service international trade in V4 group for year 2013. In the case of Poland the dominant position of services have mainly services in branches travel, transport, other business services and also computer and information.

Trasnport services include all transport services involving the carriage of people and objects from one location to another as well as related supporting and auxiliary services. Also included postal and courier services. Than travel services credits cover goods and services for own use or to give away acquired from an economy by non-residents during visits to that economy. Other business services cover research and development, professional and management consulting and technical, trade-related and other business services. Computer services consist of hardware- and software-related services and data-processing services. They exclude noncustomized packaged software and video and audio recordings on physical media; computer-training courses not designed for

a specific user; and leasing of computers without an operator. Information services include news agency services, such as the provision of news, photographs, and feature articles to the media. Other information provision services include database services, direct non-bulk subscriptions to newspapers and periodicals, other online content provision services, and library and archive services (UNCTAD, 2017).

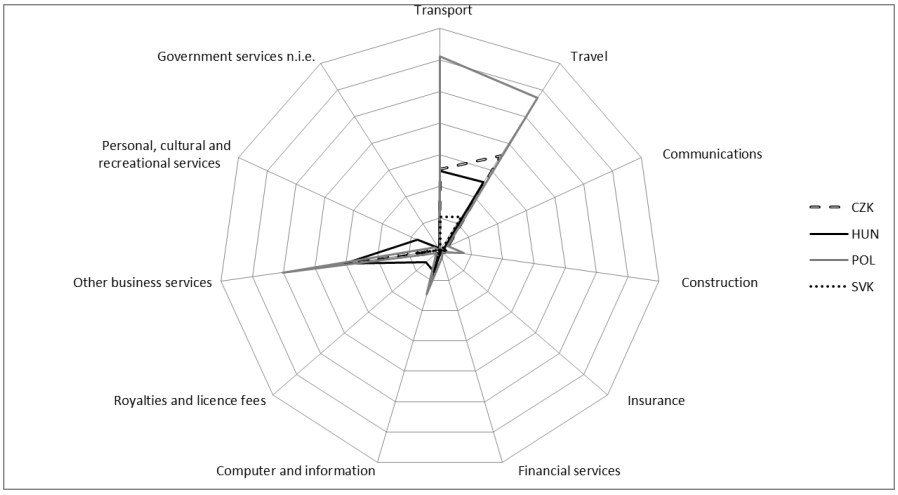

Fig. 4.20. Export by service-category in V4 COUNTRIES for year 2013

Source: Own processing by UNCTAD 2013

In the case of the Czech Republic, we can identify similar developments of services. In particular, international trade in services is focus on travel; transport and other business services; computer and information. However, not in the same volume as in Repubic of Poland. Because this country achieved the higher volume as other countries but not only in economic development also in a size of country. In Hungary, is similar situation. In Hungary are dominante mainly travel and other business services. As regards the Slovak Republic, as the smallest country in terms of volume, but have same structure of international trade

as other countries - travel; transport; other business servicess; computer and information (Fig 4.21).

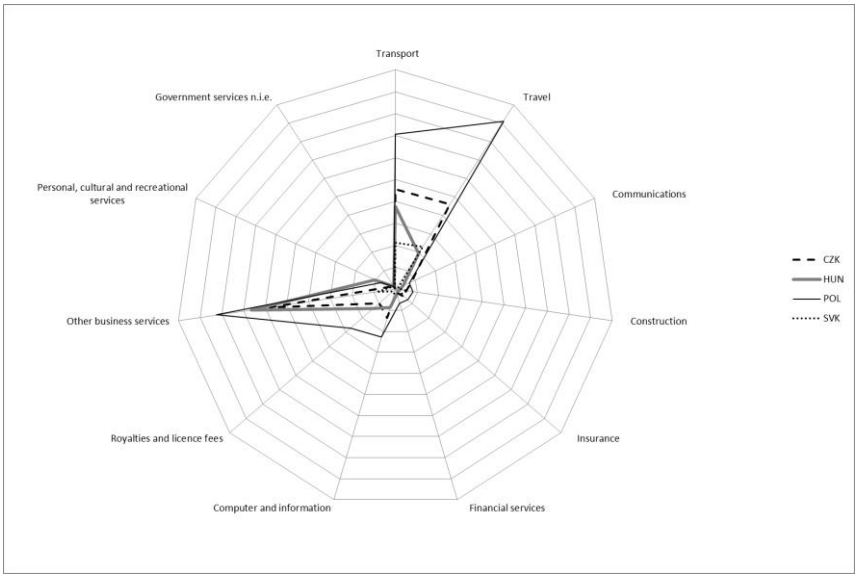

Fig. 4.21. Import of services by category in V4 COUNTRIES for year 2013

Source: Own processing by UNCTAD 2013

Import of services by category in V4 group is pointed in fig. 4.21. Dominant position from commodity structure have generally other business services, travel, transport and also royalties and license fees. oyalties and license fees which covers franchising fees, royalty payments for the use of registered trade marks and other fees paid for the authorized use of intangible, financial assets and proprietary rights. Distributive rights with limitations for audiovisual products are not included here (UNCTAD, 2017). This phenomenon possibly will by applies to all V4 countries but in a different volume.

The growing importance of services in individual economies fundamentally affects the basic strategies and documents supporting

international trade in services. Such as GATT (1896-1993) multilateral framework of rules and principles for trade in services. Acceptance of the General Agreement on Trade in Services – GATS, which was basis for a new era of trade in services. Than it was Services Directive in the Internal Market. Objectives of liberalization and internalization of services was: freedom to provide services.

4.6. The Trade Complementarity Index

The Trade Complementarity Index (TCI) can provide useful information on prospects for intraregional trade in that it shows how well the structures of a country's imports and exports match. TCI measures the extent to which the two countries are *"natural trading partners"* as defined author of index M. Michaely (MICHAELY M. 1996). It also has the attraction that its values for countries considering the formation of a regional trade agreement can be compared with others that have formed or tried to form similar arrangements. The TCI between countries **k** and **j** is defined as:

$$TCij = 100(1 - sum(|mik - xij| / 2))$$

Where **xij** is the share of good **i** in global exports of country **j** and **mik** is the share of good in all imports of country **k**. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match (WORLD BANK, 2016). Index testifies about the extent to which total exports of one country matches with what the other country imports. The advantage of TCI is able to identify complementary sectors in foreign trade regardless of whether the trading takes place directly between compared countries. Values of TCI range from 0 to 100. That´s mean, if the index reached value 100, than import/export shares of particular countries absolutely match. If the index reached the value 0 than mutual import/exports

shares of particular countries are zero so no goods are exported or imported (ŽATKO M. 2016).

The folowing graph show that mutual trade in services between Slovakia and Germany takes place mainly in services sectors, in which the countries specialize and dominate. For the future direction of mutual foreign trade is important to know, to what extent do the total demand and supply of countries match. This analysis provides the TCI and results of this are shown in Figure 4.22.

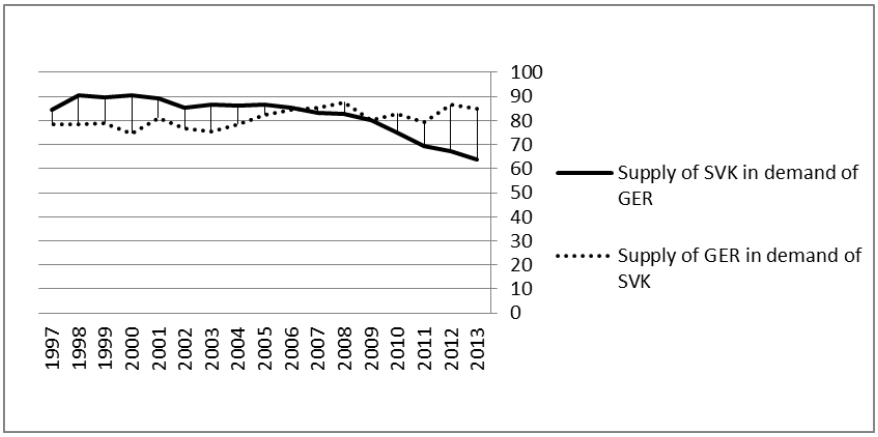

Fig. 4.22. Trade complementarity index between SVK and GER (1997-2013)

Source: Own processing by UNCTAD

For a better explanatory value of TCI, the calculation includes a wider period of time (1997 - 2013). Based on the values it can be concluded, that Slovakia is interesting trade partner for Germany from the trade complementarity point of view.

Slovak supply in the demand of Germany in 2013 reached a value of 63, 72 %. From the long-term point of view, the values of TCI have a decreasing trend. Germany supply in the demand of Slovakia reached values 85, 03 % in 2013.

Next graph show that mutual trade in services between Slovakia and Hungary. Based on the values in Figure 4.23 it can be identified, that the supply of Slovak republic in demand of Hungary has an increasing tendency (Index reached a value of 72. 09 %).

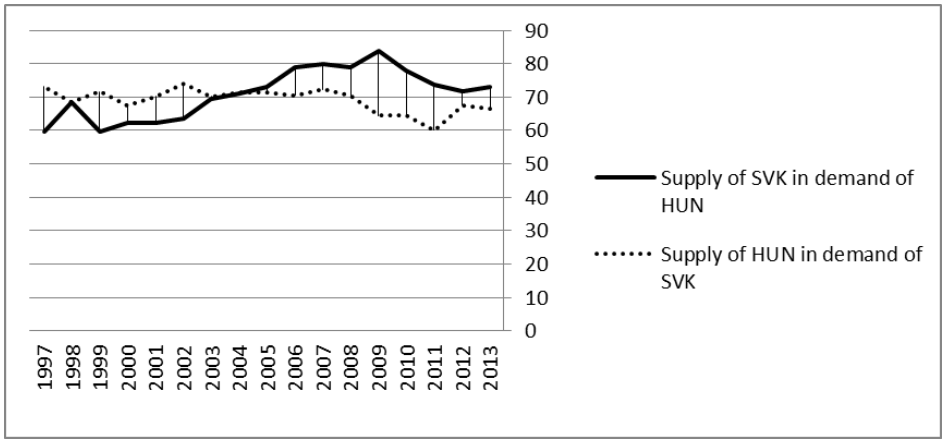

Fig. 4.23. Trade complementarity index between SVK and HUN (1997-2013)

Source: Own processing by UNCTAD.

In the case of the Hungary, supply in the demand of Slovakia, reached value 66, 66 % in 2013. From the long-term point of view, the values of TCI in Slovak republic have a decreasing trend, but we cam assume, that these countries are also natural trading partners.

In the case of a mutual commercial relationship between Slovak republic and Republic Poland we can see, that supply of Poland in Slovak republics demand reached higher value. In 2013 index reached 84,31 %. (fig 4.24).

Supply of Slovak republic in demand of Republic Poland has increasing trend and index reached in 2013 value 82, 35 %.

At least, in Czech and Slovak republic is monitored very similar situation (Fig. 4.25).

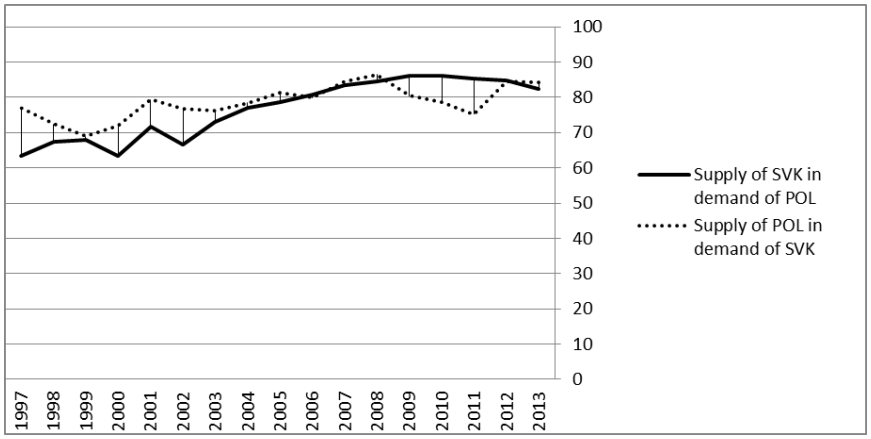

Fig. 4.24. Trade complementarity index between SVK and POL (1997-2013)

Source: Own processing by UNCTAD

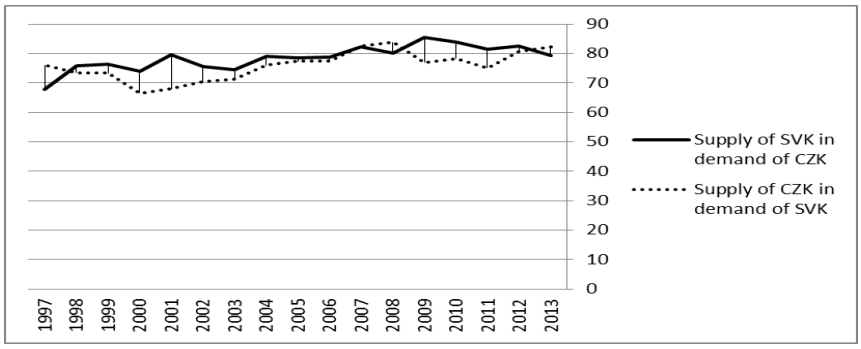

Fig. 4.25. Trade complementarity index between SVK and CZK (1997-2013)

Source: Own processing by UNCTAD

Supply of Slovak republic in demand of Czech Republic reached in 2013 value 72, 29%. On the contrary, the supply of Czech Republic in demand of Slovakia reached value 82, 27 %. From the long term we identified that the values of TCI have a increasing trend.

Trade Complementarity Index measures the extent to what are two countries natural trade partners. Based on the results of this index can be

concluded, that total export of one country matches with total import of second country on a relatively high degree. These results indicating a potential for future trade cooperation in services.

4.7. Conclusion

Currently in foreground is a research directly related to the implementation of practical economic policy in terms of using appropriate institutional regimes aimed at promoting the growth of society's well-being, measuring the effectiveness of democratic political systems or measuring their inefficiency (ČAPLÁNOVÁ A. & NOVÁK M. 2015). The interest in understanding the influence of institutional factors on the basis of institutional and new institutional economic theories is growing today (TEJ J. 2009; KAČÍRKOVÁ M. 2009). The new institutional economic theory considers level of transaction costs in economy as the most important determinant of economic system efficiency. Existence of transaction costs relates with presence of opportunism-risk and imperfect and partial informedness of economic participants. This economic subjects negotiate contrats about transaction of goods and services. In real economic environment one or both contract parties can be cheated or damaged by voluntary or unvoluntary failure of contract conditions. From this reason contract parties ensure its transactions, they create governing structures. This structures are costly and represent transaction costs.

Level of transaction costs is connected with setting of institutional framework, institutional environment. This environment is created with formal and informal institutions. Institutions influence inter alia welfare, or structure of economics. Economic system is combined by agricultural, industrial and service sector. We decided to analyze quality of institutional environment of Visegrad-Group member countries. First we researched by universal correlation and multiple regression analysis impact of sub-indices of The Heritage Economic Freedom Index and indicator of Gross Domestic Product on Coface Country Risk Assessment. Through the use of this analysis we tested our aim to

research and interpret relationship between Coface Country Risk Assessment and selected sub-indices of The Heritage Foundation Economic Freedom Index. We assumed that countries with better quality of economic freedom, that means better quality of institutional environment, achieve better risk ratings. Result of this analysis was confirmation of our assumption.

Then we focused on partial analysis of selected time series of Visegrad-Group members. We used graphical analysis and method of simple observation. By indicators of The Heritage Foundation Economic Freedom Index, Gross Domestic Product on one person (per capita) and GINI Index we observed time series of Czech Republic, Hungary, Poland, Slovakia and as control observation Germany. Despite a slight correction of the Visegrad-Group's The Heritage Foundation Economic Freedom Index, countries reached constant growth of GDP with a moderate recession between years 2008 and 2009. This recession was caused by the global economic and financial crisis. Germany has the highest economic performance and at the same time has the best rating of the economic freedom. However, it is important to monitor economic developments in Germany, because we consider Germany as a significant foreign-trade partner of the V4 countries. The recession or the conjuncture in Germany can be fundamentally reflected in the performance of the V4 countries.

We have also dealt with intragroup trade between V4 countries. To simplify, we have chosen as the fundament Slovak Republic and Trade Complementarity Index in relation to the Czech Republic, Hungary, Poland and Germany. At the end it can be stated, that country in V4 Group belong to developed countries, where the structure of the economy is characterized by the over half shares of services on GDP and on and employment. These countries have a similar structure of economy, historical as well as territorial similarity. At the same time, they can be referred to as natural trade partners in the tertiary sector.

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Chapter 5

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HUMAN RESOURCE MANAGEMENT IN SMALL ENTERPRISES AS AN AREA OF BUSINESS-SCIENCE COLLABORATION

Abstract: Collaboration between the areas of science and business is considered to be one of the most basic factors of economic growth, which was emphasized in e.g. Europe 2020 strategy. Bearing this in mind, this chapter presents the arguments for starting such collaboration and focuses especially on cooperation between scientists working at universities and representatives of small enterprises in terms of human resource management. Potential mutual benefits of both parties were discussed. The attempts were also made to highlight the challenges the scientists who start collaboration in the area discussed with owners of small enterprises must face.

Keywords: personnel, research initiatives, contracted research, universities, business

5.1. Introduction

Contemporary enterprises operate under conditions of increasing competition in the market and, under pressure of changes in customer preferences, they are more and more often forced to build the

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management axis based on the triad of values: information - knowledge - creativity (MORAWSKI M. 2003; GRUDZEWSKI W., HEJDUK I. 2002). Gaining knowledge necessary for running a business, including knowledge that supports problem-solving or dilemmas that are revealed in the management areas, especially human resource management, are more and more often considered a basis for contemporary entrepreneurship.

Conscious and purposive effect on personnel commitment requires a multifaceted approach to human in a business entity. This approach should take into consideration the comprehensive conditions of business activity. An important yet marginalized factors are non-uniform and variable interests of employees, both those with individual and group character. It is emphasized in the literature that with the lack of in-depth analysis of the motivational potential that lies in respecting employees' interests, the activities in this area do not build trust of people who perform work. Furthermore, the managers in the enterprises, using the principles of cost minimization, face difficulties with the development of motivation systems that are, with longer perspective, conducive to the improved sense of fulfilment of employees' interests (GABLETA M.2012). It seems that they not always have adequate preparation and tools that support the process of identification of employees' interest.

The above indicated problem can concern all the enterprises, regardless of their size. Nevertheless, it can be stated that this problem is more important in the entities included in the group of small enterprises[5] in terms of the number of employees, without professional personal divisions, with the owner often performing the function of the only manager and, consequently, the person who develops the motivation

[5] The criteria contained in the Commission Recommendation 2003/361/EC of 6 May 2003 were used, concerning the definition of micro, small and medium-sized enterprises, that is, those which employ fewer than 50 people and whose annual turnover or annual balance sheet total does not exceed EUR 10 million (Journal of Laws L124 as of 20 May 2003, p. 36).

system. This leads to the question of where the owners can and should search for support in solving the above indicated problems.

The answer to this question may seem simple. However, in business practice, there are many entities that provide services to support managers in the management-related processes. Examples are consulting firms and such entities as Polish Agency for Regional Development (PARP), Business Centre Club (BCC) or research centres, including universities.

The aim of this study is to indicate the reasons, opportunities and benefits resulting from the use of support of scientists in solving the practical problems of human resource management in small enterprises.

The observations were made using the critical analysis of literature sources.

5.2. Starting collaboration between the representatives of science and business: methods, benefits, limitations.

In processes of work, human has always attracted the interest of scientists. There is an increasingly large body of literature that emphasizes the view of the necessity for giving high priority to knowledge and skills of employees and especially the use of these attributes for existence and development of the enterprise. In this context, the phenomenon of employee commitment should be stressed, pointing that it results directly from the ability to manage people in both individual and collective terms.

Nevertheless, an important yet underestimated variable in the human resource management is identification and respecting the interests of employees. In fact a specific knowledge gap between the interests of employees and employer's intentions can be observed. This can have a positive effect on building of attitudes of employees that are demanded by managers of enterprises and contribute to the efficient functioning and development of the organization.

It seems that in order to bridge this knowledge gap, the actions started only by people directly involved in organization, can be, especially in small enterprises, insufficient. Identification of employee interests, and, consequently, the use of the knowledge acquired in the process, can turn out to be too complex, both in organizational and substantive terms, especially if this concerns an organization without extended human resource divisions. In these circumstances, formulation of transparent guidelines concerning building adequate human resource management system may require the support of the business environment.

Without negating the role and importance of other actors of potential collaboration, the world of science includes e.g. scientific institutes, universities, research centres and independent laboratories (BROMSKI K. 2013). Collaboration between these entities and enterprises may vary. Examples include (BROMSKI K. 2013; KORNIEJENKO K. 2010):

- orders for research and development studies (contracted research),
- collaboration within shared research initiatives,
- establishment of spin-off and spin-out companies,
- turnover of patents, licences and know-how,
- student apprenticeship programs to solve (in collaboration with scientists) problems revealed in enterprises,
- traineeship and internship programs for scientific workers in enterprises,
- establishment of systems and network structures e.g. clusters including research and development entities and enterprises.

It seems that the decision on the choice of one of the above modes of collaboration with the science sector by an enterprise requires first identification of the types of problems that can be potentially solved through the collaboration.

With respect to the problems of development of the system of human resource management in small enterprises, the motivations for searching for support of the institutions that represent science include:

- the fact that multi-task duties of the personnel and their high flexibility required in small enterprises represent the challenges for the design of the human resource management system;
- the need for an objective approach to the processes of managing individuals and teams;
- using stereotypical and repeated solutions, often thoughtlessly "borrowed" from other enterprises;
- insufficient knowledge about modern solutions; managers of small enterprises are usually insufficiently prepared in terms of professional human resource management, thus often acting intuitively;
- assumption that managers (owners), who strive for solving ongoing problems connected with market challenges do not have time or do not see the need for strategic thinking about problems with personnel; business efficiency is rarely linked to systematic approach to human resource management.

With regards to the circumstances which may encourage businesses for using the support of the world of science, one should also emphasize the economic rationality. Scientists, who need objects for their research, are more willing not to expect financial benefits. Their interests are largely connected with access to empirical data they need for professional development. In the case of the research in the field of management, this involves the opportunities for access to the enterprise, its documentation and direct examinations of the employees (e.g. observation, interview, questionnaire survey). Therefore, comparison of costs of potential services of consulting firms with remuneration for scientists usually favours the latter.

Since cheaper does not always mean better, one should consider the benefits of support to small businesses from the science sector. Solving problems with motivating people in work processes is still the focus of interest of many scientists from various scientific fields. In the field of scientific management, this undoubtedly involves popularization of the philosophy of human resource management (HRM) and development, on its basis, a series of concepts that emphasize the importance of people

with their potential as strategic resources of the enterprise and the source of its innovative development. The incessant interest of scientists in examination of the role of human in business processes is also intensified by the consequences of globalization of the economy, including changes in the needs and expectations of both individuals and communities. The phenomena that accompany demographic transitions and migration of people represent a serious challenge for the human resource areas in enterprises. Consequently, despite many years of experiences in the area of management, entrepreneurs still do not have sufficient solutions, which opens up a space for individual and long-term collaboration with the entity that has an access to international (current) research results, with the focus not on financial benefits but on the improvement of cognitive processes as a main component of scientific knowledge.

It is worth noting that observation of business practice, especially in terms of collaboration in terms of supporting enterprise management in decision processes, also those concerning personal zones, reveals that collaboration can also have some limitations.

Circumstances and goals of functioning of universities and enterprises are actually different in certain areas. This concerns e.g. determination of goals, methods of acting, criteria, assessment of results and, in particular, motivation for starting specific initiatives. Scientists strive first to study the reality which provides the basis for designing specific solutions. This is not always consistent with interests of entrepreneurs, for whom priority is both profit maximization and a relatively short period of the maximization. Another factor in Polish conditions is that commercialization of the results of scientific work remains at the stage of development, both from the standpoint of legal regulations and practice of such activities (BROMSKI K. 2013).

However, seeing the primacy of the benefits of collaboration between science and business, the areas where potential of the representatives of scientific environments would be adequately used should be emphasized.

5.3. Management of the personnel in small businesses as a challenge for researchers

Empirical research concerning functioning of small businesses has shown that the problem of efficient human management is often marginalized. Owners of businesses seek sources of success in other areas. The interest of managers in the personnel areas is not continuous. They mostly seek support in this area of enterprise functioning only in crisis situations. They are convinced that actually each problem of personnel can be solved in one manner, by increasing salaries. As shown in Table 5.1, problems connected with incomes of employees can represent the focus of collaboration between small enterprises and representatives of science. In these terms, their support may concern both professional job evaluation (determination of relevant salaries) and the choice of adequate components of salaries. A substantial challenge for the owners of small businesses is effective (and legal) linking the level of salaries with working efficiency.

The researchers who are willing to collaborate with business in the discussed area have to face a number of challenges. Regardless of the party that initiates collaboration, the researcher has to be aware that the decision-makers often experience problems with accepting criticisms and talk about their mistakes. Therefore, the irregularities diagnosed in the area of personnel management should not be presented as manifestations of inefficient management. Much attention should be devoted to the development of the effective methods to communicate with decision-makers. It is also important to choose techniques to acquire information adequate to specific conditions of enterprise functioning, including work organization and organizational culture. The latter is connected with e.g. level of trust of employees with respect to managers that determines their openness in expressing opinions about functioning of the enterprise. Researchers who explore human management problems in small enterprises have to put much effort to gain trust of the owners who are very often convinced of their infallibility and have to demonstrate much

patience and discretion in persuading the owners to change their beliefs which often is the most time-consuming and tedious stage of the entire enterprise.

Table 5.1. Personnel problems as an area of collaboration between science and business

Areas of collaboration	Detailed problems
Personnel process	– Choice of forms and methods to find new employees. – Diagnosis of training needs. – Choice of forms of employee improvement. – Diagnosis of weaknesses and strengths of the personnel. – Succession planning. – Design of job evaluation systems. – Monitoring of the labour market. – Management of labour costs.
Employee incomes	– Determination of the level of basic salaries (job evaluation). – Choice of efficient forms of payments (payroll systems). – Introduction and facilitation of the enterprise's bonus systems. – Determination of the scope and character of social benefits. – Implementation of the participation systems in financial results of the enterprise.
Work organization and working conditions	– Choice of forms of work organization. – Choice of forms of working time organization. – Improvement of physical working conditions. – Facilitation of the occupational safety and health.
Labour relations	– Planning of the enterprise's human resource policy. – Choice of forms of employment. – Choice of forms of participation in management. – Improvement of skills of negotiating with employees.
Social environment	– Building corporate image as an employer. – Coaching of superior-subordinate relations. – Improvement of internal communication. – Diagnosis of employee satisfaction.

Source: author's own elaboration

5.4. Conclusions

Development of innovativeness and effective commercialization of knowledge are very complex and multi-faceted tasks. Implementation of innovations, its level, scope and character depend on numerous factors, which can be defined as external. These include e.g. level of relations between science and business and opportunities for financing modern solutions. Furthermore, internal factors are first and foremost preparation and commitment of the supplier and recipient of the implemented technology (BROMSKI K. 2013).

One of key tools used to improve innovativeness of national economies is collaboration between science and business, which is the focus of the present study. This collaboration and its development is especially important to Poland, with its economy innovativeness substantially departing from the most of the EU economies. In this respect, it is indicated that in the recent years many European countries started the activities conducive to creation and implementation of tools used for support of collaboration of the sector of science and business. It is more and more often emphasized, also in strategic documents published by such organizations as OECD or EU and in scientific publications, that it is impossible to build knowledge-based economy without deepening of correlations between the sector of enterprises and the scientific and research sector. This is especially critical in the era of progressing globalization and technological transitions that are observed in the international arena (CZYŻEWSKA D. 2016).

This problem is especially important in light of the report prepared at the request of the European Commission which showed that Poland is at one of the last places in Europe in terms of the development of collaboration between science and business, whereas commercialization of research results was at the last position (with 4 points compared to Europe in total, which had 5.4 point on a 7-point scale) (DAVEY T. et al. 2013).

Commercialization of knowledge transferred from universities to business and its efficiency represent a combined effect of the potential and activity of scientific entities, research teams and openness to the development and competitiveness of enterprises and properly designed institutional and legal system (BROMSKI K. 2013). However, one should not forget about the activity of the business sector. It is believed that collaboration between science and business is possible mainly between universities or research centres and big companies.

However, it is the sector of small enterprises that should be especially supported by the scientific world. The belief of the managers that the problems connected with management, especially with human resource management, should be quickly and independently solved, shows the lack of understanding of 'high sensitivity' of the employee areas. This approach can be hardly considered sufficient and effective, especially with longer perspective. In this context, it is worth adding that financial limitations of small enterprises and insignificant owner's knowledge of the problems of human resources management contribute to the establishment of the view that "small companies cannot afford human resource management".

An alternative for incidental activities of managers in small enterprises in terms of the discussed relations between science and business could be a long-term cooperation with scientific institutions. Scientists would gain a real object of examinations and precious empirical material and the chance to construe well-established theories and development of academic careers. Owners of enterprises would have opportunities for perception that this cooperation brings measurable benefits to both parties. It seems that in order for it to become realistic, the initiative is needed from scientists who would meet the expectations of small entrepreneurs, invite them to seminars, organize workshops concerning typical problems of human resource areas in small enterprises. On the other hand, it is necessary to overcome the false small enterprise syndrome in owners who believe that their enterprises that do not represent a sufficient partner for a large university.

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Chapter 6

Magdalena Borowska [1]

INTERESTS OF EMPLOYEES IN POLISH STATE RAILWAYS COMPANIES (PKP SA)

Abstract: Organizational success largely depends on solutions in the area of human and work. Approach to employees depends on both external and internal circumstances. The interest in employees and their expectations has a positive effect on organizational performance. However, orientation of attitudes and behaviours of employees towards the achievement of the organization's aims requires knowledge about their interests, both those protected by law and those that are employer's responsibility. Furthermore, it is especially important to determine the priority of individual interests, especially due to motivational potential of meeting these priorities. Ensuring a sense of fulfilment of interests among employees requires an increase in their involvement in problems of the organization.

Keywords: employee interests, motivational potential, determinants of enterprise functioning, human resource policy, organizational culture.

6.1. Introduction

Nowadays, enterprise existence largely depends on how it meets the needs of their stakeholders, including first and foremost employees. It is emphasized that people employed in business entities, especially their knowledge, help organizations become innovative, be capable of implementing dynamic changes and ensure customer satisfaction, thus improving competitiveness in the market (JANOWSKA Z. 2010). This thinking inspired the Harward's human resources management (HRM) model, which clearly indicates the role of employees in the achievement of the organizational objectives. It is stressed that employees ensure the enterprise success. Therefore, they should be considered key beneficiaries (KOWALCZEWSKI W. 2008).

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Consequently, it seems justified to connect existence and development of the enterprise with the achievement of the expected benefits by employees. These benefits represent the result of the achievement of their interests and, therefore, specific expectations that refer to activities started in an organization, for whom the achievement should allow for obtaining important benefits (GABLETA M., ADAMSKA M. 2009).

Bearing this in mind, using the knowledge about the employees' expectations, both those whose respecting is legally sanctioned and those whose achievement remains the responsibility of the employer, is becoming important. Providing employees with the sense of fulfilment should contribute to a significant increase in their involvement in the organizational issues. It is also critical to determine the priority of individual interests, especially due to motivational potential of meeting these priorities. This means identification of the priority interests because, according to the Vroom's expectancy theory, employee motivation is determined by the strength of expectations and the assessment of the likelihood of its meeting (CZAJKA Z. 2009).

The activities aimed at meeting these interests should not be occasional. An important factor is the willingness of the managers to regularly identify and respect the interests. Enterprise potential and circumstances the enterprise operates in are also critical (both their individuality and variability). The circumstances determine the opportunities for the fulfilment of specific interests of employees.

The study focused on identification of interests of people employed in the Polish State Railways (PKP SA) and the scope of their fulfilment. Evaluation of the approach of the employees was made using the external and internal conditions of activity of the business entities studied. PKP SA (parent company) and the subsidiary companies form the PKP Group (PKP capital group) which provides railway transport services. Empirical examinations were conducted in the units of the three subsidiary companies of the PKP Group: PKP X (company that operates in freight transportation division), PKP Y (infrastructural division), and PKP Z

(public transportation division). They were both of quantitative and qualitative character and took into consideration the questionnaire, undisguised observation, free interviews and categorized interviews using the survey questionnaire. The examinations concerned both employees that represent managers and the lower-level employees. In total, the study examined 574 people. The results of the examinations presented in this study represent a part of empirical examinations conducted for the purposes of the doctoral thesis "Fulfilment of the employee interests in companies of PKP SA (BOROWSKA M. 2016).

6.2. Manifestations of care for employee interests

Care for employees requires regular and consistent activities (connected both with identification and assessment) aimed at their realization. This means that these interests, after their systematization, should be recognized, with the emphasis on those which should be treated as priority during their fulfilment.

The related literature points to two principal groups of interests (GABLETA M. 2012). The first is connected with the interests whose achievement was guaranteed by legal regulations, whereas the second is connected with voluntary activities started for employees that remain the managers' responsibility (see Table 6.1.).

The latter are to some extent regulated by law. This concerns e.g. occupational safety and health, salaries adequate to duties, protection of employment, protection of social benefits, equal opportunities, and functioning of trade unions. Other interests are entirely employer's responsibility.

Numerous studies have indicated that the interest in employee well-being, connected with taking specific actions to help them, can have a positive effect on organizational performance (URBANIAK B., ROGOZIŃSKA-PAWEŁCZYK A. 2010) since employees provide the most valuable capital: human commitment. Orientation of attitudes and behaviour of employees at the achievement of strategic goals of

organization requires using knowledge about the interests of employees and opportunities and conditions of their fulfilment (Fig. 6.1).

Table 6.1. Areas of employee interests protected by legal regulations or being employer's responsibility

EMPLOYEE INTERESTS

Protected by law	Remaining partially or entirely employer's responsibility
• Trainings that prepare for performing the work • Protecting social benefits • Creation of collective labour agreements • Timely payment of monthly salaries • Ensuring 11-hour break between individual working days • Informing employees about threats at workplaces • Initial or periodical trainings on occupational safety and health at the employer's expense • Initial and periodical medical examinations at the employer's expense • Providing collective and personal protective equipment at the employer's expense • Right for annual leave and leave on request • Payment of salaries or additional leave for working overtime • Respecting the anti-mobbing and anti-discrimination regulations • Establishment of trade unions	• Occupational safety and health • Salaries adequate for duties • Protected employment • Protecting (securing) social benefits • Equal opportunities • Functioning of trade unions • Additional health services at the employer's expense • Providing complete, unequivocal and topical information • Efficient flow of downstream and upstream information • Training at the employer's expense • Effect on labour time organization • Support of superiors and co-workers • Good atmosphere in the workplace • Support during redundancy (*outplacement*) • Transparent rules for promotion • Formal procedures of expressing opinions • Programs of adaptation of new employees • Organization of integration parties and events • Informing about important problems concerning enterprise functioning • Participation in decision-making processes • Organization of meetings with staffs • Providing support to employees with difficult situation

Source: Author's own study based on GABLETA *M. 2012*

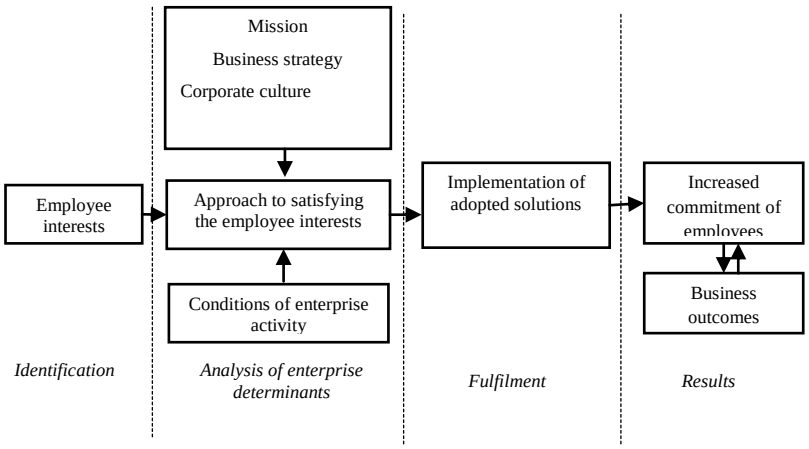

Fig. 6.1. Mode and results of ensuring fulfilment of employee interests

Source: Author's own study based on GABLETA *M. 2012,* GABLETA *M. 2003*

Fulfilment of the interests is affected by:

- external (situational) factors, that is, variable conditions in which enterprises operate,
- internal factors, connected with perception of employees and the priority given to them in business entities.

Empirical examinations concerning the area of "human and work" indicate the importance that should be attached to the circumstances of functioning of a specific enterprise and their individuality and variability. These circumstances provide specific opportunities for the fulfilment of employees interests. The actions taken in the analysed area should be incessantly adjusted to the circumstances the enterprise operates in (GABLETA M. 2003). The point is that they should not be in contraposition to changes in business environment. These changes do not necessarily mean limitations or difficulties in current activities. They often offer opportunities to taking activities beneficial to the enterprises (KRUPSKI R. 2003). From the standpoint of the fulfilment of

important interests of employees, some opportunities can be opened up by obtaining financial resources from the EU funds or changes in the labour code.

If the need or necessity of respecting the employees' interests is assumed in the enterprise, its goals should include the activities that take the expectations of the employees into consideration. The point is that the directions of enterprise operation i.e. formulation of its mission, objectives or development of the organizational culture, should be determined with respect employees interests.

Treating humans as a priority in the working process should be already manifested at the stage of the definition of the subject of enterprise aspirations i.e. its mission in the form of consistent activities that determine the range of social activity (WAWRZYNIAK B. 1989). Concretization of the objectives of enterprise activity should be accompanied by indication to the general philosophy, politics of organization's activity and personal policy. The last one is, among other types of functional policies in the organization, particularly linked to the general policy of the enterprise. This concerns in particular the principles for making decision in the area of human and labour but also the relationships between the managers and employees. It represents the expression of preferences, intentions and basic objectives of the employers, connected with human resource management (KRÓL H., LUDWICZYŃSKI A. 2006).

During formulation of human resources policies, managers should consider business effects while focusing on social aspects of enterprise functioning, which are manifested by e.g. adequate level of respecting interests of employees. It should be indicated that people can feel part of the organization if they realize the linkage between the organization's objectives and their own interests. The degree to which they are willing to identify with the enterprise depends on the readiness of the organization for offering them specific benefits (PALIWODA-MATIOLAŃSKA A. 2014). Undoubtedly, this is facilitated by presence of a specific systems of values in the enterprise, behavioural standards and

methods of thinking and behaving, which is reflected in the organizational culture (SCHEIN E.H. 1986).

Supporting the development of specific characteristics of the corporate culture implies convenient conditions for satisfying employees' interests. Greater number of social characteristics of this culture points to its effectiveness-oriented profile, with managers interested in opinions and aspirations of the employees. Such activities represent a specific signal which allows for concluding about philosophy of the enterprise. If the enterprise concentrates on people, the employees are ready to be involved through adoption of specific attitudes and behaviours with respect to the organization (KOPERTYŃSKA M.W. 2008)

6.3. Approach to fulfilment of employees' interests in PKP SA

The study identified interests of employees of PKP SA and the level of their fulfilment. For this purpose, the benefits related to the employment were analysed. The focus was on the interests protected by law and those that are managers' responsibility. The interests' hierarchy was determined in the context of a specific motivational potential that is inherent in respecting the interests. The approach of managers to satisfaction of the employees interests in the companies studied was also identified.

With large consistency of the results obtained in the study in the companies, the results are presented with respect to the entire population. This consistency, supported by statistical tests, revealed that, with respect to the answers, the respondents from the companies represent a uniform group.

A bigger scope of the fulfilment of the interests protected by law is more pronounced that those that are the employer's responsibility (Fig. 6.2). The vast majority of the respondents evaluated the scope of fulfilment of the interests protected by law (on a scale of 1 to 5) at the level of at least 4 (rather respected), with the mean of 4.6. With regards to

the interests which are employer's responsibility, this was mostly 3 (neither yes nor no), with the mean of 3.7.

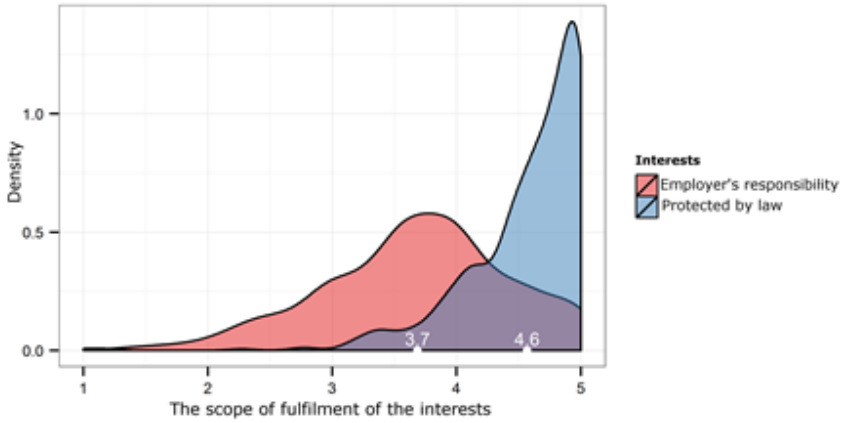

Fig. 6.2. Mean percentage of fulfilment of the interests protected by law and those which are the managers' responsibility

Source: Author's own elaboration

Due to the limits in length of this chapter, the scope of respecting individual interests protected by law was not brought closer to the reader. However, it should be indicated that the assessment of the employees was positive in this respect. The level of fulfilment of this group of interests ranged from 70 to 100% (BOROWSKA M. 2016).

With identification of the approach of managers in the enterprises studied to the fulfilment of the employees' interests which are responsibility of the employer, the first step was to determine the hierarchy of interests of lower-level employees (Fig. 6.3). Analysis of the distribution of the answers about the importance the employees attach to concrete interests revealed that the expectations connected with the work concerned almost the entire set of interests. The employees demonstrated only relatively smaller need for being allowed to have trade unions and for organization of company parties and events.

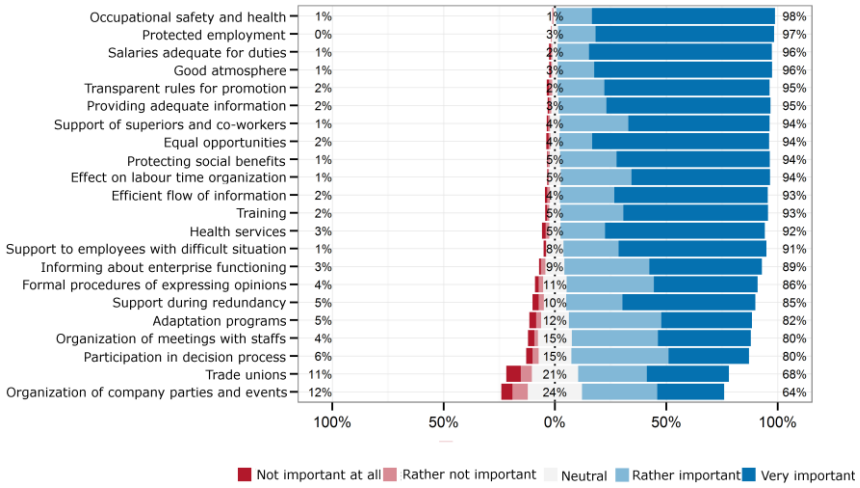

Fig. 6.3. Hierarchy of importance of interests of lower-level employees

Source: Author's own elaboration

During the empirical examinations, we also attempted to identify the interests of employees which, in specific circumstances of enterprise operation, were of priority importance to them. For this purpose, lower-level employees were asked to indicate three especially important interests they would like to be met in the enterprise.

Employers answered to the question concerning the interests with priority importance by choosing three answers (of a list of twenty two interests presented on the right side of the table 1) while giving them priority numbers from 1 to 3 (with 1 denoting an interest which was placed first in the employee's own hierarchy). The indications of the employees were used to count the frequency of choosing individual interests. This allowed for distinguishing the group of six most frequent interests: salaries adequate for performed duties (59%), occupational safety and health (39%), protected employment (31%), good atmosphere in the workplace (30%), equal opportunities (22%), transparent rules for promotion (15%) (see Fig. 6.4).

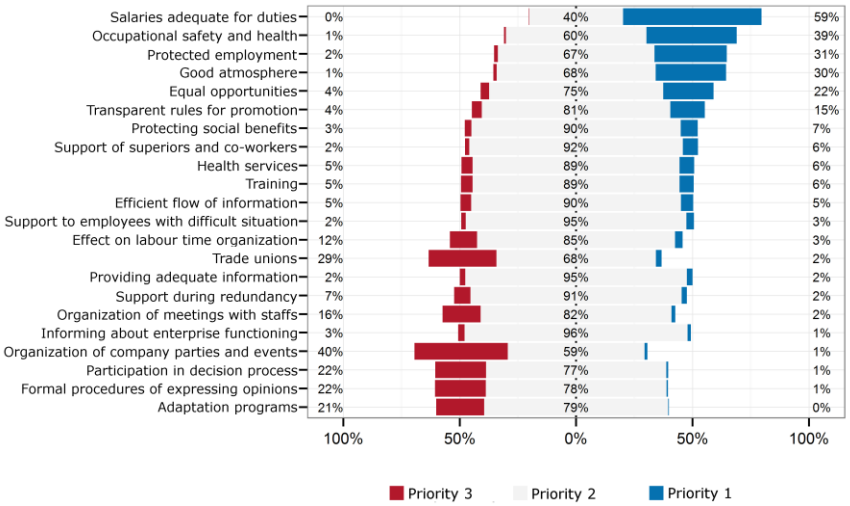

Fig. 6.4. Interests in the context of the priority given by lower-level employees
Source: Author's own elaboration

While identifying the motivational potential of the satisfying individual interests, the attempts were also made to assess the managers' awareness of the importance of specific expectations of employees (Fig. 6.5). For this purpose, the managers were asked to indicate three benefits which they thought were important for the employees. It turned out that both sets (employees' and managers') were largely consistent with each other. Similar to their employees, managers indicated the importance of salaries (52%), occupational safety and health (43%), protected employment (39%) and equal opportunities (24%). However, the managers gave more priority to protecting social benefits, seeing this as a benefit which is more important to the employees than good atmosphere in the workplace.

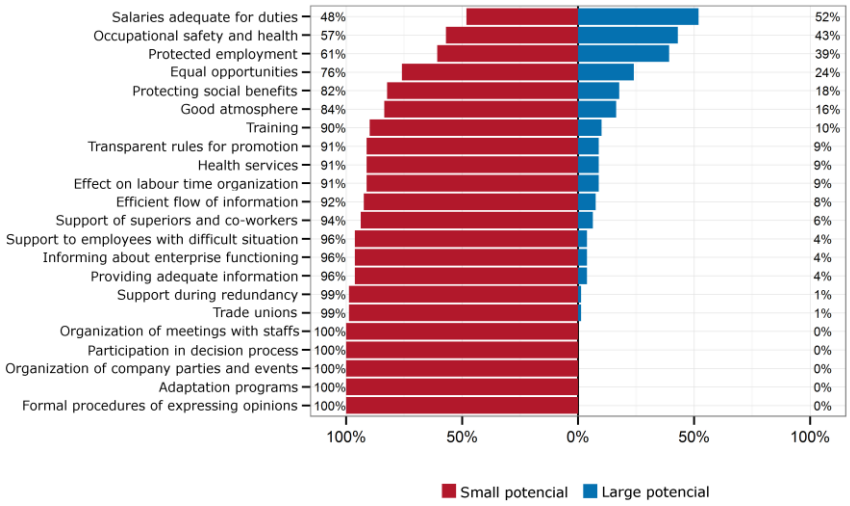

Fig. 6.5 Interests in the context of the priority given by lower-level employees

Source: Author's own elaboration

Using the identified interests of employees, the attempt was made to determine the scope of their fulfilment (Fig. 6.6). According to the indicated group of employees, the most satisfactory employer's initiatives are those concerning occupational safety and health (86%), protection of social benefits (82%), trainings at the employer's expense (81%), good atmosphere in the workplace (76%) and support of managers and co-workers (74%). Slightly less satisfying was fulfilment of interests connected with ensuring adequate information (57%) or adaptation programs (54%). The interests of lower-level employees which were assessed as not respected and absolutely not respected should be also emphasized. These included: participation in decision-making processes (32%), salaries adequate for performing duties (28%), transparent principles of promotion (26%), formal procedures of expressing the opinions (22%).

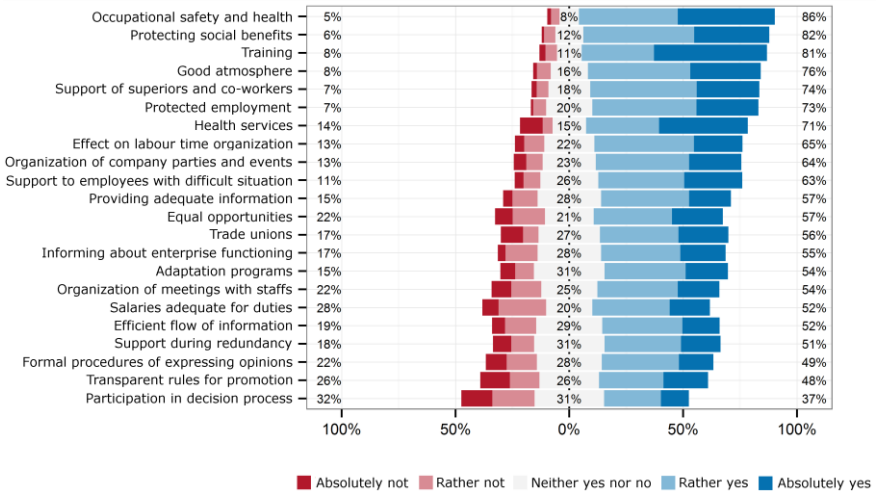

Fig. 6.6. Respecting the interests of lower-level employees

Source: Author's own elaboration

The scope of fulfilment of the interests with priority importance to employees should also be emphasized. For this purpose, Table 6.2. illustrates (based on Fig. 6.4., Fig. 6.5. and Fig. 6.6.) a synthetic presentation of a hierarchy of interests with priority importance for employees, awareness of managers and the scope of fulfilment of the interests according to the lower-level employees.

It can be seen that the satisfactory level of awareness of managers of the priority given by the employees to individual interests is not always accompanied by the demanded level of fulfilment. As demonstrated in the study, this awareness results largely from a certain intuitiveness of managers. It should be emphasized that ensuring occupational safety and hygiene and protected employment is the responsibility of the employers. Efficient railway transport requires having an adequate number of employees (who, due to the generation gap which is more and more pronounced, are difficult to be found), which corresponds with positively assessed protected employment, and creation of the working conditions

which are conducive to meeting the objectives of this transport, which is reflected in e.g. creation of safe and hygienic working conditions. Efficient functioning of railway transport requires meeting top standards of occupational safety. This is substantially connected with the EU guidelines which emphasize the problems connected with the necessity for improvement of working conditions. It should be noted that fulfilment of the above interests is legally sanctioned, which obliges employers to respect them (BOROWSKA M. 2016).

Table 6.2. Motivational potential of the interests of employees from the standpoint of the employees and managers

Interests with priority importance for employees according to:		**Fulfilment of employees' interests according to employees**
employees	**manager**	
• Salaries adequate for duties (59%) • Occupational safety and hygiene (39%) • Protected employment (31%) • Good atmosphere in the workplace (30%) • Equal opportunities for employees (22%) • Transparent rules for promotion (15%)	• Salaries adequate for duties (52%) • Occupational safety and hygiene (43%) • Protected employment (39%) • Equal opportunities (24%) • Protecting social benefits (18%) • Good atmosphere in the workplace (16%)	• Occupational safety and hygiene (86%) • Good atmosphere in the workplace (76%) • Protected employment (72%) • Equal opportunities (56%) • Salaries adequate for duties (52%) • Transparent rules for promotion (47%)

Source: Author's own elaboration based on the author's own research.

The interviews with managers revealed that knowledge about the employees' expectations in these entities is obtained through informal channels. The fulfilment of the discussed interests are also not monitored. Lack of systems of employee assessment was also documented (they

were only in the design phase). Furthermore, the fulfilment and satisfaction of employees in the analysed companies were not examined, which may represent the significant source of knowledge about the expectations of the employees. This state seems to be a consequence of the fossilized organizational culture and the lack of coherent personal policy of the entities studied (BOROWSKA M. 2016).

6.4. Conclusions

The investigations of the aim and sense of enterprise existence and identification who the enterprise should be for and whose interests it should fulfil arouse much controversy. It is emphasized in the literature on management that the answers should be searched especially in the area of the parties contributing to the achievement of the goals i.e. employees. With their knowledge, competencies, skills and experience, which, as it is emphasized, are the resources with strategic character, the enterprise can gain the demanded competitive position and meet the needs of other stakeholders. However, in business practice, observation shows that employees interests are a little appreciated factor of enterprise success. Managers often forget about the legitimacy of connecting the existence and development of the organization with ensuring the fulfilment of the interests which are important for employees. Respecting the interest of employees in enterprises remains to be more affected by the formulated legal regulations, guidelines concerning people and their work. Furthermore, it is emphasized that an important task of managers should be to support employees in the achievement of their goal, indicate the objectives and, first and foremost, ensuring the consistency between their individual expectations and enterprise strategy (path–goal theory by R. House) (ROBBINS, S.P. 2000). Individual expectations of the employees should be identified through choosing the interests of employees which are especially important to them and can be met in the enterprise (the Vroom's expectancy theory) (KRÓL H., LUDWICZYŃSKI A. 2006).

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Chapter 7

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WORKING CONDITIONS AND METHODS FOR THEIR EVALUATION

Abstract: Working conditions have a measurable impact on work productivity. The modern trend, observed mostly in developed economies, is to gradually limit the extent of physical exertion at work, along with the introduction of persistent improvements in work safety and hygiene. New technologies and other advancements bring changes to the existing work systems and workplace organisation schemes while reducing the risk inherent in many modern day work assignments. In view of the above, it may be interesting to examine the trend in the context of modern formal approaches to job evaluation, particularly with respect to the selection of criteria to be used for the task. Bearing in mind the growing significance and exposure of such aspects of modern labour as work complexity, responsibilities and cooperation, this chapter aims to examine the wealth of the existing job evaluation methods, placing due emphasis on the weights applied to those of the individual job evaluation criteria which are directly associated with working conditions.

Keywords: work, working conditions, job evaluation, methods and criteria for job evaluation

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7.1. Introduction

Development of information and communication technologies (ICT) and digital technology represents a driver for a new industrial revolution (Industrie 4.0). New technologies are remodelling labour system at various positions, thus allowing for performing the entire production processes at minimal involvement of human resources. In the countries of Western Europe, this means the response to e.g. high labour costs combined with demographic low. Changes in the character of work due to technological advances lead to a reduction in general demand for labour, but this is not only connected with disappearance of specific jobs. Automation and robotization of production and service activities lead to marginalization of certain professions and simple and repeated work. Furthermore, the need for qualified employees in new professions and new areas of expertise connected with the dynamic development of the sector of technology and information is also increasing. Since the role of the employee is evolving towards management of operations performed by intelligent machines and equipment, productivity should increase accordingly. It is generally accepted that productivity (performance) of an employee has a substantial effect on conditions they work in.

Nowadays, being a leader or a manager means "[..] to create conditions in which the employee can be successful [..]" (DAVENPORT T.O., HARDING S.D. 2010). With this approach, the problem concerns both physical and non-physical working conditions.

In contemporary economies, especially those in the developed countries, a noticeable tendency can be observed for decreasing amount of physical effort used during work and improved occupational health and safety. New technologies and technological advances usually reduce the risk involved in performance of many types of work. The aim of this study was to examine how the changes in the work environment and in work positions are reflected by a modified approach to job evaluation, especially the choice of its criteria. Job evaluation is commonly viewed as an analysis and evaluation of the degree of job difficulty and

comparing it with other types in the context of the achievement of the organization's goals. With the increasing importance and exposure of such issues as complexity, responsibility and cooperation, this study discusses current methods of job evaluation while focusing on the importance they attach to the criterion of working conditions. Apart from the presentation of the results of authors' own research, the study also refers to the materials published previously by other authors.

7.2. Ensuring good working conditions as a manifestation of respecting employee's interests

Working conditions are perceived most often as factors that are present in the environment, connected with the nature of the job and the environment, where the job is performed (POCZTOWSKI A. 1998). Two groups of factors are distinguished: tangible and intangible. The intangible factors can be material (condition of machines, equipment, facilities, buildings, workplaces etc.), physical (specific microclimatic conditions, radiant energy, noise, lighting, vibration etc.), chemical (presence of such substances as carbon oxide, gases, inorganic vapours, fuels) and biological (this concerns infectious diseases, zoogenic diseases, tetanus and other). This classification of working conditions can be used to evaluate adjustment or maladjustment of a job to the expectations and abilities of an employee. They should be designed so that the employee does not feel any burden but experiences positive emotions in order to improve his or her work performance. Skilfully chosen physical conditions prevent from employees' fatigue and make working easier and more pleasant. This helps improve motivation of people to work, with employees spending less physical and mental energy, becoming more resourceful, making fewer mistakes and processing information much faster. Working conditions in an organization are also reflected by the approach to intangible elements. This means in particular the problems of working time, choice of the organizational forms, social activity and working conditions which

include the wholeness of interpersonal relations in the enterprise (GABLETA M. 2006). A specific connector between the afore mentioned elements of working conditions is occupational health and safety, understood as the entirety of legal standards and research, organizational and technological resources which are aimed to provide employees with such working conditions that they are able to perform their work productively, without unnecessary risk of accidents or occupational diseases and excessive physical and mental load (KORADECKA D. 2000).

It is justified to refer to the previous results obtained by the authors of the present study (BODAK A., CIERNIAK-EMERYCH A., PIETROŃ-PYSZCZEK A. 2016). They concerned identification of interests of employees and were oriented towards showing the types and expectations of the representatives of the Generation Y.

As results from the questionnaire survey, the employees from the young generation (below 30 years of age) claim that the most important expectations in terms of working conditions that make a job position attractive are those connected with salaries and its relevance to the scope of duties (79% of indications). Other priorities were safe and healthy working conditions (with the same number of indications) and competent managers (71%). For comparison, good working atmosphere, support of the employer in maintaining work-life balance, seeing the sense of the performed job, and unequivocal assignment of tasks and duties are expected by ca. two thirds of the respondents from this group (BODAK A. 2017).

Therefore, high priority of safe and healthy working conditions is typical of the young generation of employees. This fact can be explained by the popular, especially among young people, attitudes characterized by the key importance attached to the exceptional care for physical and mental fitness, which, with regards to the working environment, is conventionally associated with occupational safety and health.

7.3. Job evaluation as a precondition for respecting the principles of equal opportunities for employees in terms of working conditions

Division of work that leads to its variation at individual workplaces requires different qualifications, skills and aptitudes from employees working in an organization. The requirements for a specific workplace and value of this job are determined by means of job evaluation. The requirements of the workplace reflect the objective difficulty (general resistance that the employee performing a job has to overcome in order to achieve the goal) of a specific job, i.e. skills, responsibilities, or working conditions. Therefore, each job is characterized by individual levels of difficulty.

Job evaluation is a process of systematic determination of a relative value of individual workplaces within the organization in order to determine the internal relationships (ARMSTRONG M. 2011). In the analysed process, the importance of the evaluated position for the achievement of the organization's goals is determined using the tools for evaluation and measurement instruments indicated in the evaluation method (POELS F. 2000). However, although the aim of the evaluation process is often to determine the basis for wage policy and motivation through remuneration, there are substantially greater opportunities for the use of the evaluation results. This concerns rationalization of work organization and the broader context of management in the area of personal function, including employment planning, choice of employees, assessment of the effects of their work, programming training and development (BORKOWSKA S, 2006).

The objects of evaluation include a workplace or a flexibly defined role or a position within the structure, based on competencies and skills of the person who performs the job. Furthermore, it should be noted that the object of the evaluation should be the work at a specific position and the related employee (not real but potential), who is able to work at this position and perform the assigned tasks.

Job evaluation is a prerequisite for respecting the principle of equal opportunities for employees in terms of employment in an enterprise at different positions that differ in their types and characteristics (WALCZAK P. 2004). The need for implementation of job evaluation into the organizational practice does not result directly from the employer responsibilities defined in the Labour Code (Aricle 94) but from the Article 18 (3c)§3 of this act, which says that **„** jobs with the same value are those which require the same professional qualifications, confirmed by the documents specified in other regulations or the professional practice and experiences, and the comparable levels of responsibility and effort". This points to validity and specific criteria for job evaluation, i.e. professional qualifications, responsibility and effort. It should be noted that the above mentioned regulations did not specify the conditions in which the job is performed.

In 1950, the International Committee of Scientific Organization in Geneva enumerated criteria for evaluation of job difficulty, known as the Geneva scheme. These criteria, also termed synthetic, included mental requirements, physical requirements, responsibility, condition of the working environment (working conditions). Nowadays, even if the choice of synthetic criteria refers to the scheme, the emphasis is on adjustment of the system of criteria to the changing expectations of the employers and changes in the character of the labour market. Furthermore, the "traditional" criteria favour job evaluation from the static perspective, perception of the job as a relatively constant, with specific scope of tasks and activities assigned to a place in the organizational structure (STUDNIAREK Z. 1999).

With technical and organizational development of enterprises, the contents of the job and conditions of its performing at white-collar and blue-collar positions are becoming more and more similar. The role of physical effort is reducing (and consequently, the burden of the working condition is decreasing), while the importance of independence in solving problems, decision-making and responsibility is increasing.

Approaching working conditions as a criterion for job evaluation is not always a rule, with the example being one of the most popular methods of job evaluation i.e. Hay's Guide Chart Profile. This method is based on the three core criteria being basic factors in competitiveness: knowledge, problem solving and responsibility.

No absolute measures have been developed to date that would allow for obtaining objective results of evaluation of job difficulty. Therefore, estimative methods based on comparison of individual jobs have been popular in practice. The estimative methods of job evaluation are often divided into aggregate (general and comparative) and analytical (including analytical-point methods).

The aggregate methods (e.g. job classification, ranking, pair comparison, benchmarking) are based on a general analysis and mutual comparison of the jobs without detailed examinations concerning working requirements i.e. accurate criteria for evaluation of job difficulty (JUCHNOWICZ M., SIENKIEWICZ Ł. 2006). They leave much freedom to the development of the form and content of evaluation and creation of the qualifications scale **(**SEKUŁA Z. 2011**).** Qualifications scale is a set of categories of jobs with similar levels of work difficulty and represent the basis for the development of grids and tables for salaries (level of the basic salary). In the case of the aggregate methods, key importance is attributed to knowledge, experience, common sense and intuition of the person who makes a holistic evaluation of the difficulty of a specific type of job. The aggregate methods are characterized by the easiness of use and relatively low costs of developing and implementation. However, they are little accurate, do not contain the unequivocally separated criteria for the evaluation and, therefore, they do not specify the arguments that explain why a job is more difficult than others. The methods recommended for evaluation of not more than thirty types of jobs (positions) (ROSTKOWSKI T., ZIELIŃSKI W. 2008).

Among analytical methods of job evaluation, the most popular are analytical-point methods. These methods (e.g. the afore mentioned Hay's method, UMEWAP, Ewaluator, AWP) consist in the determination of the

degree of difficulty through analysis of the previously isolated criteria and scales of evaluation of difficulty which are used as a basis for assigning a specific number of points, with the total score defining the aggregate job evaluation. In each case, a set of synthetic criteria is identified with the related elementary criteria. Next, the weights of these criteria are evaluated (MARTYNIAK Z. 1996). Compared to aggregate methods, they are more extended, expensive and labour-intensive, but they ensure higher accuracy, precision and objectivity of the results while the use of mathematical methods provides measurable benefits for making relevant decisions.

In contemporary business practice, the job evaluation methods can be divided into universal, universal adapted (to the needs of individual enterprises) and dedicated (designed for a specific enterprise).

Universal methods do not offer many benefits of the situational adjustment and uniqueness. Their basic benefits include a proven scheme of factors, criteria and a point scale.

The universal method of job evaluation (UMEWAP) belongs to the most popular in Poland. It represents the example of the use of criteria for job evaluation contained in the Geneva scheme (Tab. 1). However, by referring to the Western literature and experiences, it represents the author's proposal of the Polish scientific environment. „87”,”95” or ”2000” denote the year of an upgraded version of the method, developed initially in 1984-1985. It is used in job evaluation for both blue-collar and white-collar positions across various industries and sectors of the economy.

UMEWAP- 87 allowed for comparison of various types of work in different sectors of the national economy. UMEWAP-95, substantially oriented towards the needs of enterprises, verified the criteria for evaluation, introduced other, more accurate descriptions and more accurate interpretations, and changed the point scale adjusted to tendencies for variation of salaries and greater span of salaries between managerial and lower-level positions. It should be also noted that some preferences concerning physically demanding jobs were removed

(JACUKOWICZ Z. 2002). In UMEWAP-2000 (the most recent version of the method), executive jobs were evaluated in more detail. It is especially interesting that the criterion of working conditions was maintained while their importance was reduced from the synthetic to elementary criterion and included into the criterion of job burden. Burden depends on the required effort and the conditions in which the job is performed. It is one of the most basic criteria that differentiate between jobs (JACUKOWICZ Z. 2002). In UMEWAP 2000, the importance of the elementary criterion defined as a physical effort was reduced. With the initiatives aimed to implement the measures that protect employees, limitation of time of exposure to occupational risks, overall improvement in conditions in which the job is performed, the tendency is observed for a reduction in the importance of burdensome working conditions and dangerous factors.

Table 1. Job evaluation criteria in individual variants of the UMEWAP method

Job evaluation criteria		Maximal score		
Synthetic	Elementary	UMEWAP-87	UMEWAP-95	UMEWAP-2000
Job complexity	1. Vocational education	75	60	60
	2. Vocational experience	55	35	35
	3. Innovativeness, creativity	45	25	25
	4. Dexterity	25	20	20
	5. Cooperation	25	20	
Responsibility	1. Course and effect	60	35	30
	2. Decisions	50	35	30
	3. Means and subject of labour	25	25	25*
	4. Safety of other people	25	25	25
	5. External relations	20	20	
	6. Management			40
Cooperation	1. Cooperation			25
	2. Motivation			20
	3. External relations			20

Work burden	1. Physical effort 2. Psychoneural effort 3. Mental effort 4. Monotony, monotypic work 5. Psychical load due to a low status of the job 6. Working conditions	45 25 25 20 20	30 20 20 10	30 20 20 10 25
Working conditions	1. Labour environment burden - microclimate - water, humidity - chemical substances - noise - mechanical vibration - lighting (optical radiation) - dusts - other factors 2. Dangerous factors	70 20	25 15	
Maximal score		630	420	460

* in UMEWAP-2000- Finances and means and subjects of labour

Source: author's own study based on JACUKOWICZ Z., CZAJKA Z., JUCHNOWICZ M. 1998

With reference to the origins of job evaluation, one should note that the analysis used to concern only material (physical) conditions of the working environment, such as microclimate, air pollution, lighting and mechanical vibrations. The more conditions differed from those postulated, defined by standards, the bigger level of job difficulty. Nowadays, job evaluation takes also into consideration social conditions of the work environment. The degree and range of cooperation with people is essential. This concerns both cooperation that results from

managing people and cooperation at lower-level positions (MARTYNIAK Z. 1996).

In the structure of the evaluation of job difficulty, the contribution of individual synthetic criteria is varied, which translates into their various weights. Weight refers to relative importance of each criterion and a point score for various levels (degrees) of intensity. The highest contribution is usually assigned to labour complexity (ca. 50%), followed by responsibility (ca. 25%), whereas the lowest - to work burden and working conditions (12.5% each). With this system of importance of the components of job difficulty, white-collar positions receive a relatively higher evaluation of job difficulty compared to those defined as blue-collar positions (PAWLAK Z. 2003).

Table 1 shows that the criterion of working conditions in individual versions of UMEWAP is considered from the standpoint of points that can be obtained in the entirety of job evaluation is: ca. 14.3% for UMEWAP- 87, ca. 9.5% for UMEWAP- 95, and ca. 5.4% for UMEWAP- 2000. Using the examples of other methods, specifically oriented towards evaluation of blue-collar and white-collar positions, this contribution can reach 32% (SAF) or even 50% (Hanger-Weng), but it typically ranges from 14 go 15% (e.g. Rhomberg, NEMA, Sulzer) (PALCZAK A. 1998).

Exposure of the working conditions criterion concerns mainly production enterprises and less the organizations defined as commercial, offices, design offices and the high technology sector. Abandoning the criterion of working conditions can be justified if this aspect of labour in an enterprise occurs sporadically, with insignificant intensity.

The opportunities for a hybrid combination of traditional and competence criteria are confirmed by a method developed in Poland for the purposes of civil service corps. The KPRM refers to the convention of analytical-point evaluation and takes into consideration three synthetic criteria: competencies, character of the work position and responsibility. The set of thirteen analytical criteria also contains working conditions. The factors that restrict performing the job included larger-than-average

physical effort, out-of-office work, business trips and the threat of corruption or stress related to external customer service and inspection in other offices. (ROSTKOWSKI T., W. ZIELIŃSKI W. 2008).

7.4. Conclusions

According to the approach emphasized by EU standards, an innovation is understood to mean any changes in terms of products, processes and methods which represent something new (or a significant improvement) to the enterprise (Podręcznik Oslo 2008). Implementation of a new method of job evaluation and its new variants to organizational practice can be regarded as such an innovation. A tendency for the use of evaluation of employee competencies in business entities is being observed. Competence evaluation is typically based on the three synthetic criteria: skills, intellectual abilities and attitudes. There is a relatively significant situational freedom of choice of the elementary criteria. The evaluation concerns only these skills and individual characteristics of employees which are consistent with the adopted strategy and enterprise goals. It should be noted that job evaluation takes into consideration various aspects of competencies, however, from the standpoint of the requirements concerning this position.

In analytical-point methods, which remain to be used frequently, the weights of individual evaluation criteria are changing. The importance of such synthetic criteria as labour complexity and responsibility is increasing. In general, with the use of new technologies and work organization systems, the importance of the working conditions criterion is decreasing, which, in light of job evaluation and the related salaries, can even lead to abandoning this criterion in evaluation of job difficulty and, consequently, the effect on the basic salary. However, in practice, the dominant approach is to reduce the weight of this synthetic criterion by considering of only these elementary criteria which are relatively permanent or normal. Other job difficulties or burden are paid in the form of special bonuses and cash equivalents. Final decisions are determined

by the number of factors which are burdensome or damaging for health in a specific position, degree of the burden and time of exposure of an employee to their effect. The employer is also obliged to protect health and life of employees by ensuring safe and healthy working conditions, while preventive measures should always precede compensating activities.

Due to a general tendency for a substantial reduction or elimination of the risk involved in performing certain jobs, it is justified to conclude that jobs cease to be dangerous or harmful (JACUKOWICZ Z. 2002). This is reflected by business practice and, consequently, in job evaluation.

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Chapter 8

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INNOVATIVE CULTURAL INCLUSIVENESS IN MEDICAL TREATMENTS (LEARNING FROM THE PAST)

Abstract: Innovation addresses major barriers to progress by migratory research through collaborative, interdisciplinary developmental initiatives. Critical thinking along with hands on skills to create, design involves a process of problem solving followed by creative and systemic action. Innovation in Medical treatments is cross cultural symbolizes a remarkable commonality of purpose among the patients to expand the benefit for the common good of people and their health which encourages immediate use and function. These cherished customizations bring change through a new drug combination or new treatment concerned. The critical factor in promoting medical innovation should include the areas affecting the essentials of life, development and modernization demands in people, technology use to control, reduce reasonably sustain the cost of activities, promote entertainment and appreciations of grey-areas. Inter-medical-disciplinary initiatives and interactive innovation will benefit economy, increases treatment reliability and facilitates life with better utilization of resources. Medical education should also inspire learning other medical treatments by providing opportunity to all share their learning which when applied will bring newer thoughts to practice.

Key words: interdisciplinary, critical thinking, interoperable cultures, unani medicine, aboriginal medical practices, customizations, inclusiveness, education

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8.1. Innovation vs Research

Innovation is essential and central in the development of economy. Increasing attention has been paid to innovation by different countries depending on the level of education, research and industrial development and innovation competence (KOTILAINEN H. 2005). Table 8.1 – 'Innovation vs Research' depicts that there is more demand for intensive research in many sectors, but as public expenditure on fundamental research is being cut back, with stringent allocation of funds, highly efficient research and development is diverted towards innovation. An invention is an idea, an outline model or something similar, whereas an innovation is an invention that has been commercialized in the marketplace by enterprises.

Table 8.1. Innovation vs Research

Innovation	Research
Interdisciplinary	Intra-disciplinary
Expanded Interoperable Systems	Limited interconnect of disciplines
Immediate use & function	Applied to certain hypothesis
Understood & Cherished by everyone	Interpreted by the Researcher
Trial-error runs, Customizations	Experiments, Discoveries
Change/New Product/New Service	Publications
Patent Protection & Commercialization	Citations

Source: MARHABAN M.H., UMACHANDRAN K. 2017

Experience displays that tailored and impact-oriented measures can be established and realized only with the backing and tutoring for thorough innovation propagation. Innovation Management performance can progress customized results by having the right set of capabilities. Innovation Management is the means for accomplishment of the growth goals and for flourishing in a progressively competitive commercial arena (SELHOFER H. et al. 2012). Initiatives aimed at increasing the organization's ability to compete can do so by pursuing structural

changes such as mergers, reduction or relocation of operative units or the introduction of new systems. Table 8.2 - 'Elaborations for innovation' are focal points of innovation aimed at implementing an initiative for change will be successful through its members prepared for new change intended. Change most severely affects the people involved; consequently, it is necessary to develop human aspects which help people to adapt to change (AMORÓS A. & TIPPELT R. 2012).

Table 8.2. Elaborations for innovation

Elaborations for Innovation
Essentials Life basis & Ecology Security…
Development & Modernization Health, Safety, Environment, Waste, Exigencies, Welfare…
Technology Computing, Mobile, Automation, Space, Imagery, Nano Sciences…
Entertainment Cinema, Dramatics, Sounds, Lightings, Laser Displays…
Grey – areas Missed in the above-board statements….

Source: MARHABAN M.H., UMACHANDRAN K. 2017

Innovation addresses major barriers to progress by migratory research through collaborative, interdisciplinary developmental initiatives. Collection and comparison of different medical practices from various healing systems including the aboriginal could transform our understanding of health and wellness towards a convergence for the benefit of all humanity. Evolution of blueprint for innovation advancing information processing to transform life science (SHARP P. et al. 2016) in medical protocols of transcultural practices are affected and defeated by regime change despite the considerable efforts (JUILLET L. 2000) of the natives to transcend the latent information to pass down their generations. Critical thinking along with hands on skills to create, design involves a process of problem solving followed by creative and systemic action.

Innovations and inefficiencies are persistent anomalies in organizations, while Innovators tend to be ego driven to change the external work processes. Greater objectivity in innovation management requires a discipline of disinterestedness in the hierarchy of beliefs and values (ELLIOTT D.R. 2007) on education administrators.

The teaching should consistently encourage students to be creative in their approach, as innovation happens only when they ask questions independently, make connections between ideas, think creatively, challenge and participate effectively, and reflect on their learning (OFSTED, 2010) as the best practice be comprehensively embedded, with carefully considered priorities.

8.2. Change Requirement and Invitation to Innovation

Innovation in Medical treatments is cross cultural symbolizes a remarkable commonality of purpose among the patients to expand the benefit for the common good of people and their health which encourages immediate use and function. Subjective notion of randomness and believing in more positive autocorrelation between random items than others, is a mistaken belief about randomness embodied is paradoxical with the general success of humans at discriminating the unrewarding randomness from the potentially valuable structure in the environment. (FARMER G.D. ET AL. 2017).

Assessing the ailment is specifically evidence-based indicator which can identify weaknesses in health and capture other environmental and socioeconomic factors. Physicians often must make quick assessments based on limited and sometimes conflicting information sources and characterize evolving situations using partial information from sources varying in credibility and complex epidemiology (PAPANICOLAS I. AND SMITH P.C. 2013). Health systems are expected to be effective in improving the health status, be attentive to equity, responsive to patient's expectations, and ensure financial protection. However, the healthcare expenditure is steadily growing, and governments are becoming

increasingly concerned in achieving higher levels of efficiency, matching financial sustainability with high quality delivery of healthcare. Therefore, there is a need to innovatively identify the recourse. Figure 8.1 – 'The Production Process in Hospital' care portrays the inefficiency in transformation process of physical inputs and right mix of inputs being put in place, to the final stage of the quality of the outputs produced, has great scope for variation in effectiveness, even when employing the same physical inputs, activities or physical outputs. The value for money is the notion of cost–effectiveness compared with valued health outcomes to the costs incurred.

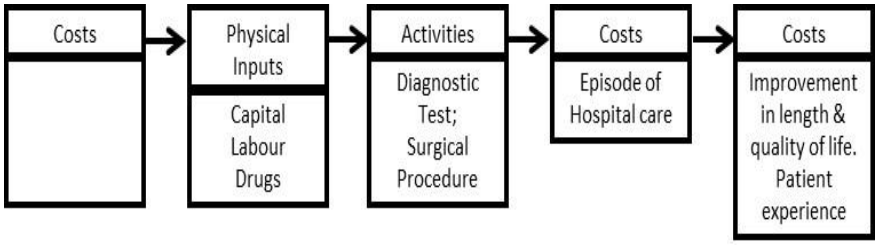

Fig. 8.1. The Production process in hospital care

Source: Papanicolas I., Smith P.C. (2013)

8.3. Medieval Medicines and Treatment Practices

In the Egyptian Jewish life, between the 9th and 14th centuries, the medical profession and its allied metiers such as pharmacy, bone-setting and herbalism were considered important. This was the period Jews had been so affected by an outside culture as when they lived under Islam in the middle Ages. The opportunities of earning a living in medicine were far greater than any other comparable scientific pursuit (ISAACS H.D. 1990). Geniza contained vast collection of medicaments for several illnesses, since the art of herbalism increased among the Arabs. Intensively marketable activity of importing herbs and drugs from India

and Persia were listed alphabetically with action, uses and some cases toxicity were also discussed. Some medical students of those ages gained their knowledge and experience by being apprenticed to a physician of repute. Others attached themselves to a hospital where reading of public lectures to students seems to have been a widespread practice. In India, the Unani System of Medicine came from Arab and Iran, and flourished tremendously.

The system was introduced during the 8th century AD, got rooted in the country as an indigenous system of medicine. Unani physicians prospered in retentive its traditional strength and benefitting from modern scientific progress over the years. The management of health and diseases delivers preventive, promotive, curative and rehabilitative holistic approach (RAIS-UR-RAHMAN ET AL. 2013), ensuring equitable access for all citizens, regardless of socio-economic status, gender, caste and religion to affordable, accountable, appropriate health services.

8.4. Complementary Medicine

Critics of complementary medicine are underpinned with herbal medicine for its unique and have a solid basis for scientific evidence, safety and efficacy of its practice. Aboriginal medicine custodians were individuals or groups of families who have inherited their knowledge through oral traditions passed down generations (ASHA B. 2002). The land has important spiritual and economic dimensions for the Aboriginal Peoples who use it for subsistence activities like trapping and hunting. The governance should acknowledge policies that would recognize and duly support the identity, culture and the rights of the natives. It has been proved that the global economies in their desire to enjoy rights have ignored the economic benefits affecting the natives, through loss of land, environmental damage, cultural change and adjustment for want of employment benefits (GLADU J.P. ET AL. 2003). Opposition to the practice of traditional medicine has created lack of recognition that the natives have no special protection rights concerning over the impact on

their health and wellness of their society. Inter-medical-disciplinary initiatives bring success through zero investments and exemplifies outside expertise than the core discipline. Innovation of accommodating the best of both unani and aboriginal medical treatments will transcend information and facilitate transparency of disciplinary knowledge to a brief, requirement orientation, and relevancy for successful drug derivative evolution. Interactive innovation brings a lot of benefits to the economy, diminishes wasteful productivity, reduces obsolescence, increases treatment reliability and facilitates life with better utilization of resources.

With organic food and natural way of living conscious development, has impetuses the interest in ensuring that protected areas fulfill their increasingly critical role as protectors of ecological systems and species represents an opportunity to incorporate the knowledge and values of native peoples in managing lands that they have known and cherished for generations (JEAN ET AL., 2003). Its on-going rigorous scientific validation of medicines, practice, and fidelity will take it to rightful and recognised place alongside other medical and allied health practitioners within primary healthcare (COWPER A. 2012).

Evolved from the Indigenous or traditional herbal medicines are the synthesis of therapeutic experiences of generations of practising doctors of indigenous systems of medicine for over hundreds of years while nutraceuticals are nutritionally or medicinally enhanced foods with health benefits of recent origin and marketed in developed countries. Indigenous or traditional systems of medicine have the drugs primarily dispensed with water decoction or ethanol extract. Fresh plant parts, juice or crude powder are a rarity rather than a rule (KAMBOJ V.P. 2000, ZYSK K.G. 2008). The diversity of medicinal plants and herbal medicines were commonly used (WHO, 2005) are illustrated in the following table 8.3.

Table 8.3. Diversity of medicinal plants and Traditional Use

Plant	Traditional use
Fructus Agni Casti	Aphrodisiac, calefacient, contraceptive, emmenagogue, sedative and as a tonic
Cortex Berberidis	Cystitis dysmenorrhoea, eczema, fever, haemorrhoids, inflammation, menorrhagia, nasal congestion, rheumatism, tinnitus, vaginitis, cholagogue, diuretic, emmenagogue, homeostat, laxative and tonic
Gummi Boswellii	Abdominal pain, asthma, coughs, dysentery, fever, jaundice, pimples, kidney stones, pimples, sores, stomach jaundice disorders, antivenin and emmenagogue
Semen Cardamom	Asthma, bronchitis, colic, coughs, fainting, fever, stomach cramps, urinary stones, aphrodisiac, appetizer, diuretic and emmenagogue
Fructus Chebulae	Anthelminthic, astringent, cardiotonic, dentifrice, diuretic, laxative, blending gums, diabetes, gastrointestinal disorders, ulcers and urinary disorders
Semen Cucurbitaceae	Asthma, burns, constipation, eczema, fever, tapeworm's toothache
Folium Cynerae	Anaemia, diabetes, fever, gout, rheumatism, urinary stones
Cortex Granti	Dyspepsia, sore throat, menorrhagia, leucorrhoea ulcers
Pericarpium Granati	Bronchitis, fever gastrointestinal ailments, menorrhagia, respiratory tract infections and worms
Folium Guaveae	Abdominal pain, bleedings gums, cough, gastritis, headache, ringworm, vaginitis, wounds, worms, emollient and galactagogue
Lichen Islandicus	Asthma, cramps, bronchitis, cough, diabetes, exhaustion, gastric disturbances, immune depletion, migraine, nausea in pregnancy, wounds. Emergency food source, emollient and galactagogue
Fructus Macrocarponii	Asthma, fever, loss of appetite, scurvy and stomach ailments, gallbladder, liver disease and wounds
Cortex Magnoliae	Allergic rhinitis, headache, lack of appetite, respiratory congestion, neurosis, fever, uterine stimulant
Herba Millefolii	Emmenagogue, eyewash, haemostat, laxative, sleep aid, stimulant tonic, baldness, prostatitis, vertigo; Externally for haemorrhoids, haematoma and burn injuries
Fructus Momordiaceae	Treat anaemia, arthritis, colds, fever, gout, infertility, kidney stones, peptic ulcers, stomach ache and worms
Fructus Myrtilli	Capillary fragility, diarrhoea, eye disorders, haemorrhoids, intestinal & skin disorders, venous failure, as diuretic
Radix Panacis Quinquefolii	Diuretic, digestive, tonic and stimulant. Used to enhance stress resistance, cough, loss of appetite, colic, vomiting, insomnia, neuralgia, rheumatism and headaches
Cortex Phellodendron	Burns, cough, fever, jaundice, malaria, skin wounds and sores
Rhizoma Picrohizae	Anaemia, asthma, diarrhoea, dyspepsia, fever, headaches, obesity, malaria, stomach ache. Anti-inflammatory agent, cathartic, cholagogue

	and emmenagogue
Oleum Ricini	Emmenagogue, to induce labour, burns, bronchitis, diarrhoea, itching, earache, haemorrhoids, pneumonia, rheumatism and sprains
Aetheroleum Rosmarini	Cholagogue, diaphoretic, emmenagogue, headache, menstrual complaints, tiredness, defective memory, sprains and bruises
Folium Rosmarini	Cholagogue, diaphoretic, emmenagogue, headache, menstrual complaints, tiredness, defective memory, sprains and bruises
Cortex Salicis	Constipation, urinary incontinence, Sprain and bruise
Fructus Tribuli	Abdominal distension, diarrhoea, kidney stones, nosebleeds, vitiligo. aphrodisiac, diuretic, galactagogue, general tonic and uterine tonic
Flos Trifolii	Dermatological disorders such as psoriasis, eczema, asthma and cough
Ramulus cum Uncis Uncariae	Carminative, diuretic, muscle relaxant. Cardiovascular disease, colic, convulsions, stroke and vertigo
Cortex Viburni Prunifolii	Menstrual irregularities and nervous tension. Also used as an antispasmodic, diuretic and tonic
Radix Withaniae	Bronchitis, dyspepsia, impotency, scabies and ulcers

Source: WHO 2005, KIM ET AL. 2007, WALKER D. 2015

8.5. Innovation Management in Medical education

Comprehension is a complex process often viewed as the essence of reading during which meaning is constructed through interactions between text and reader. This is influenced with prior knowledge and experience that are brought to bear on it (BECK I., MCKEOWN M. 2006). Medical education should also inspire learning approach of unani and aboriginal medical treatments by providing opportunity to all the students in the institution and include other people from the society to share their learning which when applied will bring newer thoughts to practice. The gap is adequate promotion, progression and awareness, the need to continuously train through capacity development and networking the young to sustain the development of inputs provided (LAMONTAGNE M. 2011).

8.6. Conclusion

This is no less remarkable achievement given the increasing ability to understand the evolution through many trials for setting right the error runs in aboriginal medical treatments. These cherished customizations bring change through a new drug combination or new treatment concerned. To be competitive the critical factor in promoting the competitiveness brings focal points of medical innovation which should include the areas affecting the essentials of life, development and modernization demands in people, technology use to control, reduce reasonably sustain the cost of activities, promote entertainment and appreciations of grey-areas.

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