University of Economics in Bratislava
Faculty of Business Economics with a seat in Košice

PODNIKOVOHOSPODÁRSKA FAKULTA V KOŠICIACH

ACTA OECONOMICA CASSOVIENSIA

Scientific journal

ISSN 1337-6020

Vol. V, 2012
No. 1

The aim of the journal is to publish the papers concerned with developing of new knowledge in the field of economic theories and its application in business practice. The scope of the journal covers the wide range of research problems of business economics, management, marketing and finance, knowledge economy, innovation policy, etc. The journal contains empirically (experimentally) founded studies, survey studies, contributions to "Discussion" (personal views and attitudes on controversial issues in economics as science, as a professional practice, etc.) and reviews. Integrative studies documented by relevant data from central and east European regions and member countries of European Union are specially welcomed. All papers are peer reviewed. The journal is published twice a year.

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Ministry of Culture reg. Nr.: 3239/09

ISSN 1337-6020

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INNOVATIONS AND QUALITY, INNOVATIONS AND MARKETING

INOVÁCIE A KVALITA, INOVÁCIE A MARKETING

Vojtech FERENCZ – Jaroslav DUGAS – Dagmar PRIVIDI – Anna KRIŠTANOVÁ

Abstract
As success of the product on the market so final commercial triumph of innovations are contingent on the process of ceaseless quality assurance. Hence, none company activities pertaining to continuous quality assurance and enhancement can be separated from the innovation activity. Both small and medium size companies may in this respect tap into and draw from the experience of the leading market economies. Ideas for the top management often resemble, in the domain of quality management, suggestions discussed in the innovation process management analysing literature.

Keywords: innovation, innovation potential, enterprises, innovative strategy, management

Abstrakt
Proces neustáleho zabezpečovania kvality je nutným predpokladom uplatnenia výrobkov na trhu, ale aj celkového komerčného úspechu inovácií. Preto od inovačnej aktivity nemožno oddeliť podnikové aktivity súvisiace s neustálym zabezpečovaním a zlepšovaním kvality. Aj slovenské podniky v tejto oblasti sa dokážu v mnohom poučiť zo skúseností vyspelých trhových ekonomík. Námety pre vrcholový manažment v oblasti riadenia kvality sú často podobné námetom, ktoré nachádzame v literatúre o manažmente inovačného procesu.

Kľúčové slová: inovácie, inovačný potenciál, podniky, inovačná stratégia, riadenie

Introduction

If it is expected that innovations would be commercially successful the process of quality assurance of as innovated products so the supplied services cannot be disclosed from the innovation policy, and hence the prime importance of each company should be quality of these very products and of the services rendered. That a company would be booming it has to be offering products or services that: *Reflect the anticipated need or purpose of use; Satisfy expectations of the customer; Are consistent with any pertinent standards and specifications; Agree with legal requirements, rules, directives, directives and safety rules of the company; Are produced at competitive prices; Are supplied at costs that guarantee profitability.*

1. Quality of the Innovated Product

At managing the innovation process it is extremely important that the prime attention when developing new products would be paid to the fact that quality, reflecting the need of customers, would be implemented already on the product development and design stage, i.e. that the product quality would be carefully secured on pre-production levels. That is exactly the modern quality management trademark that is based on the user-oriented definition of quality. This means that collected at first should be any market related information and all information reflecting the need and desires of the customer, and these will be accordingly turned over, in the form of legitimate demands, to planning and designing the product, preparation of manufacture, procurement of necessary materials, etc. Of high importance, as for the quality assurance so for the innovation process, is collaboration of the marketing and the product proposing/designing divisions of the company if the two divisions present a part of a sub-division of the all-company organizational structure or not. A frequently encountered issue when developing a new product is that designers or the project engineers are not aware of the market requirements. By the customer expected quality properties must translate into technical specifications and features of the product or of the service provided, whilst the translating process allows unmasking a variety of bottlenecks already on the level of developing new products. This method is being referred to as the *bottleneck engineering*. If such hot spots turn up and are identified the management has still enough time to decide whether to shovel in more investments to eliminate the problem or if to apply an alternative solution – a compromise in the product quality (Demjanová, 2006).

Falling among the principal quality management tools a management has at its disposal are:

- Market survey;
- Monitoring economy/cost of quality (basic tool for economic management of the company);
- Improving quality assurance procedures and processes (utilising appropriate methods for phases of the product life cycle);
- Quality inspections;
- Education in quality;
- Metrology and technical standardization;
- Using computer assisted method for improving collection, processing and assessing information on quality (Computer Assisted Quality or CAQ);
- Quality checks;
- Utilising statistic methods in managing quality;
- Utilising analyses-based methods.

Market survey can be taken for the most important quality management tool use of which allows one to pinpoint, identify and transform requirements of the customer as to the product or service specifications. Juran's quality spiral expresses the fact that quality management commences with market survey performed prior to developing a new or innovated product and closes with following up the product at the customer. Hence, in concern is a model of mutually interacting activities that are of impact upon quality of the product or service in various phases beginning with existence of the need up to establishing if the need are sufficiently satisfied at being aware that individual quality system components vary in importance for various kinds of activities (Figure 1).

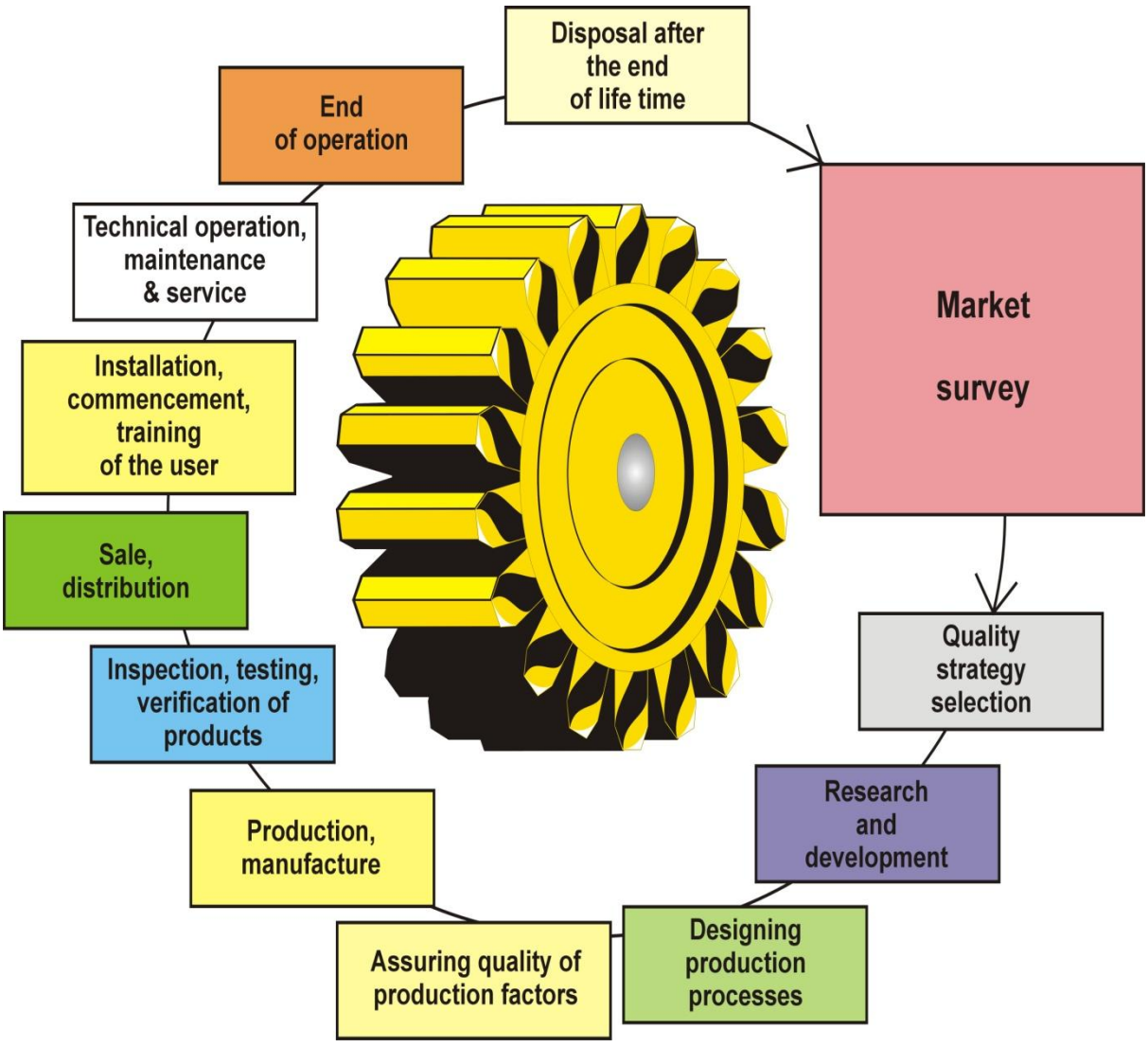

Figure 1
Juran's Quality Spiral
Source: Original design

As seen, to satisfy needs of the customer from the point of the innovated product quality primarily two elements of the system of quality are important: **quality marketing and quality designing**.

Quality in marketing cover the process of recognising, defining and specifying requirements of users on the new product, and involved in this are the below steps:

- Identifying the market requirements;
- Establishing anticipated volume of production;
- Investigating the possibility to meet requirements put on the product;
- Performing preliminary product specification, especially considering:
    - The product operational characteristics – influences of the environment, conditions of use, reliability, etc;
    - Tangible product characteristics – style, colour, taste, smell, etc.;
    - Product ergonomic characteristics;
    - Requirements of the customer pertaining to the product packaging;
    - Requirements of the customer in respect to continuous quality verification and assurance;
    - Applicable standards and legal regulations – the patent issue;
- Utilising the system in the way allowing collecting, assessing, practical use and allowing for the customer feedback.

Quality in design is based on the assumption of being conscious of responsibility for performing the product design, development and construction quality requirements according to needs of the market with a focus on manufacturing conditions, commencement and the very operation and use of the product. It is implemented proceeding by below outlined steps:

- Specifying responsibilities for meeting the quality requirements;
- Specifying time-schedules programmes, checkpoints and stages within which performed will be evaluation or verification of the product design (Design Reviews);
- Strict adherence to the safety rules, standards, laws, environmental influences, etc.;
- Allowing for the characteristics important from the point of quality such as reliability, maintenance and operation, etc.;
- Specifying testing and measuring methods per production phases, as well as specifying the criteria for accepting products as implemented on the design level;
- Evaluation of the design using analytical method (e.g. FMEA method – Failure Mode and Effects Analysis, FTA – Fault Tree Analysis, etc.), applying testing or checking protocols on prototypes or on production samples;
- Use of independent verification of the product design; documenting the results;
- The product can proceed to the manufacturing level after final assessment of the design;

- Reviewing condition for introducing the product on the market;
- Specifying procedures applicable in case of changes to the design; assessing necessity of changes/alterations and the risks involved;
- In case of a change determine if necessary corrections can be introduced into the manufacturing process.

Whilst establishing preliminary specifications of a product presents the "quality output" in marketing, "quality output" in designing should be to stipulate accurate specifications – defining of the product; defining of its properties, the material from which it is to be produced, defining of the manufacturing process, and also specifying exact conditions under which is the product to be used.

Success of respecting and adhering to the aforesaid facts would result in better communication between the sales and marketing, research, development, design and manufacture, which ultimately means successful shortening of the innovation cycle period by at least a third and in some cases even by half.

2. Innovations and Kaizen

Meaning of the "quality assurance and improvement" phrase ceased to pertain to the very product only a long time ago. The term covers anything that is going on in the company, and exactly this is the centre of the Kaizen philosophy that is based on the information that "*if wherever in the company even the slightest improvement is taking place, this ultimately results in overall improvement of the production quality* ".

This simply means that if a company intends to develop either a brand new or innovated competitive product participate on the effort absolutely must, to a lesser or greater extent, any and all departments of the company, and that their activities must be coordinated and submitted to the single goal – securing quality and/or satisfying needs of the customer.

Kaizen – is the managerial system based on the philosophy of permanent, minute and gradual improvements in all undertakings and company-wise.

It has been built on three major attributes or musts:

- Build on your own abilities and dispositions;
- Effect improvements using your own resources;
- Use your own means, costs and other realities.

In terms of substance, Kaizen is characterised by five "S-s":

1. *System in anything.*
2. *Systemic organisation.*

3. *Systematic maintaining of neatness, systematic operation, maintenance, safety.*
4. *Systematic inspection.*
5. *Strive to eliminate losses immediately.*

Advantage of the system dwells in that that minor innovative changes necessitate only minor investments, and thus present lower risk of failure.

Table 1
Comparison of Kaizen v. innovations features

	Kaizen	**Innovation**
1. Effect:	Long-term but not dramatic	Short-term but dramatic
2. Pace:	Small steps	Large steps
3. Assets:	Sustained innovations	Interruption (break) and reconstruction
4. Time scope:	Constant	Abrupt and impermanent
5. Protagonists:	Each company employee	A few "chosen"
6. The method:	Collective spirit, teamwork	Individual ideas and attitudes
7. Prospect of success:	Continuous and rising	Interrupted and limited
8. Guide to success:	Traditional know-how and current status of technology	Technological amenities, inventions and new theories
9. Guarantee of success:	Involvement of the personnel	Using technology only
10. Investments:	Minor funding activities, big effort to sustain	Excessive funding, negligible effort to sustain
11. Evaluation criteria:	Performance and procedures ensuring better results	Profit from the result
12. Practical use:	Excellently usable for slowly expanding economies	Mainly usable for rapidly expanding economies

Source: Original design

It was in the late 50s and especially in early 60s of the 20th century when the Kaizen management system began to be widely used in Japan in connection with the total quality control and management of all work movement (TQC – Total Quality Control and TQM – Total Quality Management). The very Japanese perceived Kaizen as the passport to attaining success on the global market, and are still holding it for the critical issue when attempting to understand the difference between Japanese and Western management system in connection with innovations.

Other comparisons of Kaizen vs. innovations, as can be seen in also Table 1, reside in that that so typical for Kaizen are: adaptability; teamwork; general focus; effort to improve production details; colleagues-orientation; inter-functional orientation and organisation; already existing technologies; open and common information; extensive and predominantly intense feedback. To the contrary, typical for innovations are rather: creativity; individuality; special focuses; striving to attain enormous progress in a short period of time; technology-focus; strictly functional orientation; organisation, business management and a supporting crew of co-workers; continuous hunt for new technologies; secret and mainly internal information; limited extent of feedback. Kaizen is not dependant on some especially refined techniques nor on cutting edge technologies; rather, it will suffice with commonplace albeit regularly utilised method such as for example the "seven tools of quality control" and in most cases suffice the will in-business experience. Innovation, though, links closely with huge investments and complex technologies. Companies and businesses that opted for making leaps into success no matter what indulge in the innovation that represents a "big" change and focuses on a technological breakthrough or introduction of top managerial concepts and manufacturing methods, and that takes a dramatic course – attracting attention of almost anyone. Kaizen is far from being that astounding and its consequences are seldom visible immediately; still, it is a continuous process whilst innovation is usually of one-off nature and closed. In a successful company, the Kaizen system resolves the issue of introducing a company culture under which can anyone admit existence and presence of whatever problems. These may at times relate to only a single domain or may intertwine multiple domains at a time. Again, the example may be development of either a brand new or innovated product that necessitates cooperation and joint effort of marketing, research and development, design, technology and production specialists. Obviously, Kaizen also respects the fact that the management that wants to amount to something and to be profit making must satisfy needs and requirements of the customer. Even though innovation is able to step up efficiency the results attained begin loosing their importance if the level is not being taken advantage of consistently. It is exactly due to this fact that the innovation level attained should be supported by performing Kaizen activities that will ensure its sustaining and improving, whereas as it was already mentioned above, whilst the innovation is of a one-off nature success of which is weakened by the competition and flagging standards, on cooperation based Kaizen is moving towards growing success and incessantly strives not only to maintain but also to improve the standards. Kaizen is more appropriate for slowly growing economies, whereas innovation is rather a phenomenon of rapidly growing economies for whilst Kaizen results in success based on the effect of numerous minute improvements from the innovation it is expected that huge investments it involves will result in leap-wise success. From the economic point, usually more profitable in the

developing economy marked by high costs of the material and energies, redundant capacities and stalemating markets seems to be Kaizen, and not innovation.

Following the World War II, rapidly growing market opportunities and turbulent development of technical innovations experienced in course of several years caused that more effective for a number of manufacturing companies it was to develop new products based on new technologies, and not based on slow and well though over efforts to introduce improvements. To satisfy the steadily growing demand were managers introducing an innovation after another one, not even giving a thought to obviously lower profits from innovations. Motivated by the post-war era, a number of predominantly western managers can be seen even today to be disinterested in the improvements reflecting Kaizen philosophy. Instead, and despite their enormous practical experience they depend heavily on introducing innovation changes. In this way, they are securing prompt growth of profits, and are similarly rapidly becoming successful and promoted in their companies. Without being aware of it, such managers are entirely loosing sight of improvements and gamble on innovation only. And then, another reason for prompt introducing innovations is the importance of financial statements. Recently, the system of financial reporting of companies is deeply premeditated, and it is forcing the manager to justify each of their actions, whilst they have to substantiate each of their decision and its impact on foreseeable and unforeseeable financial results, and mainly on rate of return of investments. These systems are automatically shutting the door to improvements.

Improvement is by definition a slow, stepwise and not readily visible process, results of which become tangible after a rather long period of time. Kaizen philosophy focuses on the process (progress) and not on the result, and the abovementioned western emphasis on results guaranteed almost exclusive position to the innovation. Which but does not imply that the Japanese management adhering to Kaizen philosophy is not interested in innovations – just to the contrary, it is enthusiastic to introduce innovation … through Kaizen. Generally speaking, Kaizen is being applied on the field of production and marketing, and innovation on the field of science and technology. Evidently, Kaizen may "make it" also in the science, research and development, and the innovative ideas also in marketing.

The need for inventing and utilising new technologies cannot be disputed, and the difference is in that what is going on after a new technology has been introduced: let us assume that placed on the market is a new, using cutting-edge technologies manufactured product. At the beginning, it is extremely expensive and it's quality fluctuating; then, batch production commences, costs are decreasing, and both productivity and quality are perking up. And here is the time for the western researcher to eagerly embark on resolving provocative projects; and though they are doing excellently when compared against the

Japanese designer and their designs, in the field of technologically top products they are still lagging behind if their initiative remains focused solely on "marked forward jumps", forgetting about the daily Kaizen. Despite our emphasising and as if preferring Kaizen, the need of innovation should not be lost sight of. As innovations so Kaizen are highly important and useful for further existence and growth of the business, they are not mutually excluding but, rather, they very appropriately complement one another.

3. Innovative Marketing Strategy

Due to globalisation and continuous growth of technologies, the current market environment is becoming more and more vibrant. To further develop their business intentions can only companies that are able to invade the market with revolutionary ideas transformed into new products and innovative processes based on detailed mastery of the customer.

Past years brought about a raft of opinions on strategic management, when significantly distinctly coming through since the early 90s of the previous century have been especially two tendencies:

- *Strategic management based on change* – emerges as a result of complex and turbulent environment. The basis of thus conceived strategy is the ability to adapt to continuously changing environment, to be ever-ready to change and to be able to change;
- *Successful application of microeconomic theory to modern strategic management* – it was already Porter who unveiled the competitive strategy basis in that, what are the bonds between a company and its environment like (Figure 2). The strategy conceptualisation is based on from the outside to inside approach. Emphasised is the market position role, and success is attributed rather to careful selection of the market and position on it than to inner qualities of the company. Porter's model of five forces and his generic strategies of low-cost, differentiation and specialisation have been celebrated not only in theory but in practice as well.

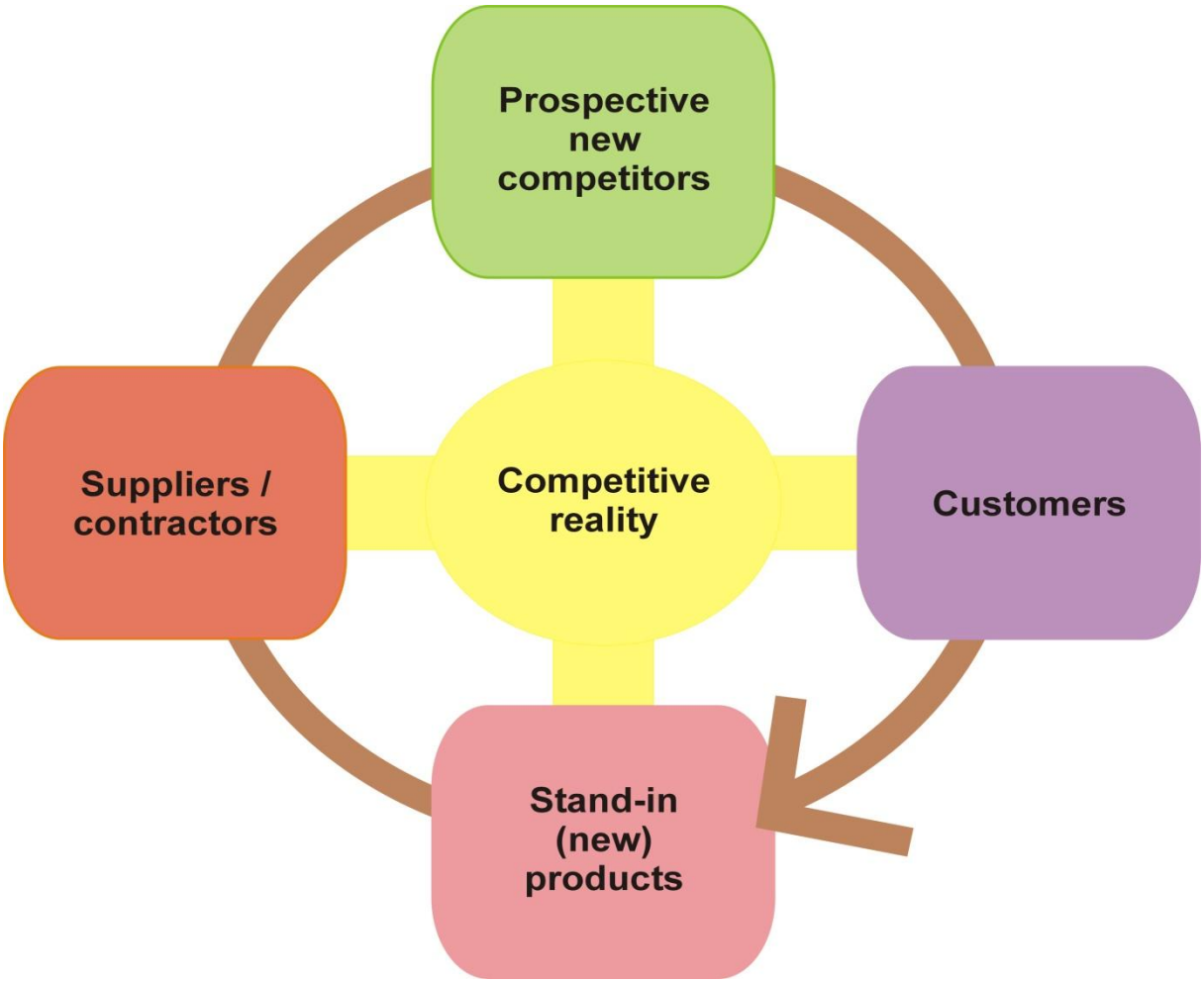

Figure 2
Porter's competitive strategy basis
Source: Original design

Marketing, as the activity satisfying a need by use of the market, is so fundamental that it cannot be taken for a detached function of management. It is an overall view of the meaning of whatever business-making from the point of its ultimate result, i.e. from the point of customers who decide on profits of the company concerned (Drucker - Maciariello, 2008). The authors rather correctly take marketing for omnipresent motivational element of behaving, and in such way qualified management systems directly point to importance of marketing in development of companies. In this sense, marketing motivates development of the company towards meeting desires of the customer, developing inner structures of the company so that they would be able to satisfy needs of the customer on the market. That a company would be able to fully satisfy needs of the customer included in its organisational structure it has to have R&D, design and manufacture technological preparation departments. It has been proven that exactly in these departments arising are preconditions for establishing a competitive advantage and that accumulated here are innovative scenarios for product development.

Successes of the innovation based marketing concept of a business are attained only if:

- Systematically implemented is free flow of information, which allow pinpointing of challenging ideas on unexpected places and that forces the management to utilise whichever information of fragments of them;
- Contacts among the company divisions are absolutely free, tight, and especially frequent, if not continuous;
- Requested and maintained is the teamwork tradition;
- Established is the status when the management unconditionally believes in innovations and renders proper and sufficient resources to realize them.

Current comprehension of innovations is based on the fact that traditional understanding of resources is often unimportant. Development and production of a new product does not take years but months, and in some cases even weeks, whilst the customers are co-creators of new products – they provide feedback in real time and participate on the set of customer-oriented experiments. Innovations are the basis of contemporary competitive strategies, and manufacturing processes have became so effective that replacement of the entire product is cheaper than repair – this fact is highly significantly influencing speed of introducing innovations to the market. Utilisation of information and communication technologies supports arousal of new products and services. These technologies speed up the rhythm of innovating and allow increasing the number of new products. And there is another one outstanding phenomenon – the Internet, which accelerates formation of new brands and new approaches to business making.

"To open a new market or a new category seems to be the most effective way how to make it on saturated markets. Experienced these days can be integrating of entire branches, and developed exactly this way are also new categories of products. Let us consider at least a few examples– here we have fun learning, and the desire of numerous customers that their automobiles would serve as an office as well. Televised broadcasts and the Internet are tightly interconnected. These ways of business making can, at a time, arise as a consequence of the innovative marketing process " (Kotler *et al.*, 2007).

"The principal goal of innovations is the effort to upgrade competitiveness of products, and to achieve a more favourable position on the market. Close-knitting of innovations and marketing results in interconnecting the innovation system and the field of economy " (Drucker - Maciariello, 2008).

The **innovative marketing** concept is perceived as introduction of new methods of supporting the product sales through introducing improvements into the branch of packaging, promotion, and media campaigned products and services.

Innovations brought about by the innovative marketing produce technologically new products, which gives rise to a variety of effects:

- *A product introduced to the market using innovative marketing significantly changes nature of the market* – introduction of the Walkman and later on of portable CD players, MP3, MP4 players, and recently their use in and through the automobile.
- *Sale of such product may decrease the volume of sales of other products on the very same market* – after introduction of Kinder Surprise sales of chocolate and of chocolate truffles significantly dropped, which resulted in ban on the "Kinder-egg" in the U.S.; introduction of the Barbie collection reduced sales of other dolls, and of the profit too.
- *A product introduced to the market using innovative marketing principles may result in incremental sale also when the sale of other products does not drop* – sales of Actimel, which is not a yoghurt products substitute.
- *If incremental sales are absent the product introduced onto the market using innovative marketing may significantly restrict sales of multiple categories of products* – cereal bars that are consumed as snacks influence sale of a series of product categories, such as chocolate truffles, salted snacks, and even yoghurts.

Through applying innovative marketing assumed may be higher investments into production, which but may result in significantly higher financial returns. This is due to the fact that sales may be incremental as well – in a way in which the very product generates new sales whereas they present the source of decreased sales of whole categories of products of the competitor.

Conclusion

In these tumultuous days, companies are dying to find new ways how to break onto the market with their products, and how to stay there. The ultimate goal of introducing innovations is to enhance competitiveness of products and services, and hence to improve one's competitive position on the market. By linking innovative strategies with marketing interconnected come the innovation system and economics. The very innovation transmutes an idea, hunch, or invention into a competitive advantage, and the company is given the opportunity to address the customer with presenting them products that meet both their needs and expectations. But hey, the competitor is alluring exactly the same customers. Thus, companies must get into the fight to show who is able to offer more to the customer; success and failure reflect the quality vs. affordability ratio. Unfortunately, such a fight or such a competition is more often than not lost for the small and even innovatively successful company as their ideas and even implemented innovations are regularly gulped down by companies with well-elaborated marketing strategies and with predators' attitude to doing business. That is why companies should duly care about the

"innovation and marketing" harmony and would not underestimate one of the pair.

At present, innovative marketing, and especially the issue of its utilisation are extremely important for companies. Hence, managers have to learn how to make use of their knowledge in the field, and how to apply it in practice at utmost utilisation of the entire company's potential.

References

1. CRAWFORD, C. M. 1996. *New product Management*. Boston : Irwin, 1996.
2. ČIMO, J. 2010. Úloha inovatívneho marketingu v komplexnej inovačnej stratégii. In *Ekonomické rozhľady*. ISSN 0323-262x, 2010, č. 3, s. 418 - 428.
3. DAVENPORT, T. H. 1995. *Process Innovation: Reengineering Work Trough Information Technology*. Cambridge : Harward Business School Press, 1995.
4. DEMJANOVÁ, L. 2006. *Formy systému strategického pozorovania a ich implementácia v podnikovej praxi.* In: *Acta Oeconomica Cassoviensia,* roč. 1, 2008, č. 1, s.52-61.
5. DRUCKER, P. - MACIARIELLO, J. 2008. *Management*. 1. vyd. New York : Colllins, 2008. 568 s. ISBN 978-0-06-125266-32.
6. FERENCZ, V.: Stratégie zvyšovania inovačnej výkonnosti MSP. In: Transfer inovácií č. 12/2008. SjF TU v Košiciach, 2008, s.13-16, ISSN 1337-7094
7. FERENCZ, V.: Metódy a nástroje pre zvyšovanie inovačnej úrovne MSP v dodávateľskom sektore automobilového priemyslu, Dizertačná práca, 2010
8. FERENCZ, V., MIHOK, J.: Dodávateľský sektor a finančná kríza. In.: *Automotive Industry,* č. 4, 2008. ISSN 1337-7612
9. FREEMAN, C. 1985. *Desempleo e innovación tecnológica. Un estudio de lan ondas largas y el desarrollo económico*. Madrid : Ministerio de Trabajo y Seguridad Social, 1985.
10. HEČKOVÁ, J. - HUTTMANOVÁ, E. 2011. *Poznatkovo intenzívne služby a ich význam pri generovaní a difúzii poznatkov*. Dostupné na internete: http://www.pulib.sk/elpub2/FM/Kotulic7/pdf_doc/huttmanova.pdf
11. HIDALGO, A. - ALBORS, J.. 2004. *New Innovation Management Paradigms in the Knowledge - Driven Economy*. Madrid : Universidad Politdcnica de Madrid, 2004.
12. HOLLANDERS, H. 2008. *Measuring Services Innovation: Service Sector Innovation Index*. Six Countries Programme Workshop „Non-technical Innovations - Definition, Measurement & Policy Implications". Karisruhe : UNU-MARIT - Maastricht University, 16 - 17 October 2008. Dostupné na internete: www.merit.unimaas.nl
13. HRAZDILOVÁ BOUČKOVÁ, K. 2010. Současný inovatívny marketing. In *Ekonomické rozhľady*. ISSN 0323-262x, 2010, č. 3, s. 430 - 439.
14. JÁČ, I. - RYDVALOVÁ, P. - ŽIŽKA, M. 2005. *Inovace v malém a středním podnikáni.* Brno : Computer Press, 2005. 173 s. ISBN 80-251-0853-8.
15. *KAO, J. 2009.* Navigating the New Geography of Innovation. *Keynote Presentation. May 19, 2009. Dostupné na: http://frontendofinnovation.blogspot.com/2009/05/keynote-presentation-from-john-kao.html*
16. KOTLER, P. - TRIAS DE BES, F. 2004. *Inovatívny marketing. Jak kreatívním myšlením vítězit u zákazníků*. 1. vyd. Praha : Grada, 2004. 200 s. ISBN 80-247-0921-X.
17. KOTLER, P. a kol. 2007. *Marketing management*. 12. vyd. Praha : Grada Publishing, a. s., 2007. 788 s. ISBN 978-80-247-1359-5.
18. KOVÁČ, M. 2003. *Inovácie a technická tvorivosť.* Košice : SjF TU, elektronické

publikácie SjF TU, 2003. Dostupné na: http://web.tuke.sk/sjf-icav/stranky/obrazky2/e-texty/_skripta/inovacie.pdf
19. KOVÁČ, M. - JAHNÁTEK, A. 2010. Technologická podpora inovácií. In *Mihok, J. a kol.: Podpora inovácií. Stratégie, nástroje, techniky a systémy*. Košice : Centrum inovácií a technického rozvoja, 2010. 296 s. ISBN 978-80-970320-0-5.
20. LUMNITZER, E. - PASTOR M. 1998. *ENVIRAUTOM - zborník pre podporu environmentalistiky a riadenia procesov.* 1998. Dostupné na internete: http://zbornik.enviro.sjf.tuke.sk/9901011/t9901011.htm
21. MIHOK, J. a kol. 2010. *Podpora inovácií. Stratégie, nástroje, techniky a systémy*. Košice : Centrum inovácií a technického rozvoja, 2010. 296 s. ISBN 978-80-970320-0-5.
22. ŠESTÁKOVÁ, M. 1997. Reinžiniering a teória manažmentu. In *Ekonomický* časopis. ISSN 0013-3035, 1997, roč. 45, č. 8 - 9, s. 641 - 665.
23. ŠLOSÁR, R. - ŠLOSÁROVÁ, A. - MAJTÁN, Š. 2002. *Výkladový slovník ekonomických pojmov*. Upravené vydanie. Bratislava : SPN, 2002, s. 77. ISBN 80-08-03334-7.
24. TOMEK, G. a kol. 1992. *Marketingová stratégia podniku*. Praha : Management Press, 1992.
25. VALENTA, F. 2001. *Inovace. Od Schumpetera k nové ekonomice*. Praha : VŠE, 2001.
26. VAVRINĆÍK, P. - DUGAS, J. - FERENCZ, V. 2011. *Základy manažmentu inovácií*. Bratislava : Vydavateľstvo EKONÓM, 2011, 228 s. ISBN 978-80-225-3184-9
27. VÍTKOVÁ, R. - VOLKO, V. - VÁPENÍČEK, A. 2005. *Konkurenceschopnost malých a středních podniků v aliancích (clusters)*. Praha : Národní informační středisko pro podporu jakosti, 2005. 115 s. ISBN 80-02-01772-2. Dostupné na internete [cit. 14. 1. 2008]: http://www.npj.cz/publikace_get.asp?id_14=87

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BUSINESS INTELLIGENCE AND BUSINESS PERFORMANCE MANAGEMENT AS SYSTEMS SUPPORTING CONTROLLING IN THE ENTERPRISE

BUSINESS INTELLIGENCE A PERFORMANCE MANAGEMENT AKO SYSTÉMY PODPORUJÚCE CONTROLLING V PODNIKU

Janusz NESTERAK – Bernard ZIĘBICKI

Abstract
Controlling has become a commonly applied management concept, consisting in controlling the enterprise on the basis of an analysis of its current operations and obtained results. The complexity of the functioning of contemporary companies makes it necessary to use advanced systems enabling conduct of business analyses. Solutions of this type are provided by Business Intelligence class systems. In the article, the principles of operation of this type of systems are explained. Also a new generation of BI systems has been presented, which is called Business Performance Management. The last part of the article covers a discussion of directions and benefits of the use of the mentioned systems in controlling.

Keywords: Controlling, Business Intelligence, Business Performance Management

Abstrakt
Controlling sa stal všeobecne využívanou koncepciou manažmentu, spočívajúcou v riadení podniku na základe analýzy operatívnych činností a dosahovaných výsledkov. Komplexnosť fungovania súčasných podnikov si vyžaduje nutnosť využívania vyspelých systémov, umožňujúcich vykonávanie obchodných analýz. Riešenia tohto typu prinášajú systémy triedy Business Intelligence. V článku sú vysvetlené princípy fungovania systémov tohto typu. Predstavená je taktiež nová generácia systémov BI, opisovaná ako Business Performance Managment. Posledná časť článku opisuje smerovania, ako aj výhody využívania menovaných systémov v controllingu.

Kľúčové slová: Controlling, Business Intelligence, Riadenie výkonnosti podniku

Introduction

The basis of a well operating controlling system in the enterprise is an efficient information system that permits obtaining the necessary data and their processing in order to support the decision-making process. Therefore, among entrepreneurs increased interest is observed in modern solutions in the field of IT. The enterprises managed with the use of controlling are forced to implement IT systems ensuring a higher degree of availability and safety of information resources, increase in efficiency, economy and flexibility of their service. An information system correctly implemented and adjusted to the specific character of the enterprise may prove a factor determining success of the controlling

implementation process. These needs have become an impulse to create and develop Business Intelligence (BI) systems.

The purpose of this publication is to present "the philosophy" of Business Performance Management and Business Intelligence, and indicate their suitability in supporting controlling activities in the enterprise.

1. Business Intelligence systems as a basic tool of contemporary business analyses

For several years, we have been observing a growing interest in Business Intelligence (BI) products, offered for enterprises. It should be strictly related to an increased awareness of the management boards of the companies of these systems, and increased customer needs to introduce IT solutions more useful than so far operated. BI systems introduce solutions clearer and arranged in such business areas, as: records and settlement, budgeting and forecasting, multidimensional analysis and reporting. The solution proves effective, especially in the situations when the company has a diverse range of products and services, extended network of co-workers, branches, or a substantial number of customers.

Business Intelligence is a relatively wide notion. In the subject literature it is also referred to as: managerial information, business information system, business intelligence, "white intelligence", intelligent business.

In pursuit of defining properly the notion of Business Intelligence in business terms, it is possible to start from the most general observation, namely that it is a process of conversion of data into information, and of conversion of information into knowledge, which can be used to increase the enterprise competitiveness. A more precise definition of Business Intelligence enables to understand it as a collection of concepts, methods and processes used to optimize business decisions. BI is a broad category of applications and technologies aimed to collect, gather and analyze and provide access to data, so as to enable the companies' employees to make better business decisions.

On the basis of the presented attempts to determine precisely the notion of BI, a simple definition can be developed, recognizing these systems as a set of tools and methods enabling to the managers of various levels of the enterprise to ensure full integration of the held data collection, ensure to their subordinates instruments of their analysis and visualization in accordance with variable needs, and share its results, preserving, on one hand, safety, and efficiency, on the other hand.

Thanks to a competent use of the data contained in information resources of the company, supported by experience and knowledge of its employees, BI systems facilitate making the most relevant business decisions. They ensure discovery of possibilities, identification of trends and intuitive detection of

events essential for business. BI means also collecting and managing data, and analyzing and distributing information.

The elements forming Business Intelligence are most often presented in the form of a pyramid (figure 1).

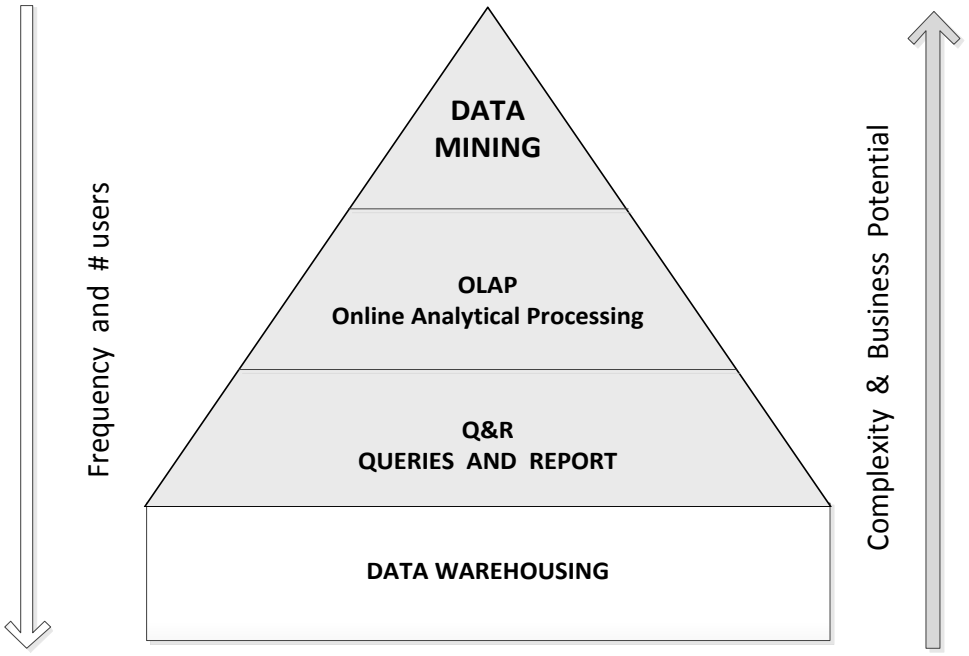

Figure 1
The pyramid of Business Intelligence
Source: Ufford, D.Q., Business Intelligence, The Umbrella Term, BWI-werkstuk, 2002; available: http://www.few.vu.nl/onderwijs/stage/werkstuk/werkstuk-quarles.doc, (cited 22.02.2012).

The basis for the presented pyramid is Data Warehousing, created by W.H. Inmon. It defines Data Warehousing as "a central repository of all significant data that are collected by particular business systems of companies" (Inmon, 2000). A data warehouse is a set of integrated, thematically oriented databases, designed for the purpose of supporting decisions, and all the data contained in these bases refer to a specific moment in time. Such action results in standardization and linking of the data gathered in various information systems, being so far in disposal of the enterprise. It will exempt, at the same time, transactional systems from the need to create reports and will enable a parallel use of various modules of the discussed IT product. Data Warehousing is maintained on an organizational server, mainframe type. Data from various OLTP (Online Transaction Processing) applications and other sources are selectively extracted and arranged in the database of the data warehouse for the purpose of using by analytical applications and users' queries. In the process of creation and operation of the Data Warehouse, 3 sub-processes can be distinguished, determined in brief as ETL:

- Extraction - data are extracted from one or many sources and copied to the warehouse.
- Transformation - then data are converted into one format, aggregated and standardized.
- Loading - after extraction and transformation, data are placed in the warehouse.

The next element of BI pyramid is the *Q&R - Queries and Report* system. It is commonly considered as the simplest analytical tool in the area of the data warehouse. The users of this instrument have a rich set of possibilities to visualize, process, enrich, export and distribute data. Tools of the *Q&R* type expand the possibilities of the so far used systems with question such as: "what happened?", which are the most often asked by the managerial staff of the company. In the queries and report systems, two kinds of reports can be distinguished:

- standard reports, examples of which are reports on sales volume, production, or other data significant from the point of view of the conduct of business operations, concerning, for instance, different periods, responsibility centres or geographical areas,
- ad-hoc reports, in which the user creates sets of precise questions concerning information included in the report.

The OLAP (Online Analytical Processing) technology, in turn, makes it possible for users to carry out complex data analysis through a fast access to multidimensional areas of the enterprise. The OLAP enables not only to obtain answers to questions, "who?", "what?" and "when?", but also "what if?" and "why?". The OLAP applications enable to forecast the future on the basis of the gathered and made available historical data. The multidimensional analysis enables to find interrelations that may not be noticed directly in a group of non-processed record data. It is important that the OLAP applications provide to managers only information they need to make effective decisions, both in the operational and strategic area. A superior feature of the OLAP application, which enables a multidimensional, practically unlimited insight into the enterprise, should be highlighted. Multidimensionality, as the most precious feature of the OLAP, provides the basis for testing and reasoning through a flexible access to information. The OLAP system gives the possibility to aggregate data at a different level, creating bases for setting trends of changes in any area (Vierdoes, 2007, pp. 12-15). Hence, high usefulness of this module in controlling.

A peak of the presented Business Intelligence pyramid is Data Mining (data exploration, data probing, data extraction), which uses dedicated IT modules to discover interrelations between the data for the purposes of supporting the decision-making process. "Data mining is a process of

exploration and analysis, automatically or semi-automatically, of large amount of data in order to explore important models and rules" (Berry, Linoff, 1997, p.5). Data mining is used, first of all, to: classify, estimate, forecast, explore association rules, group on the basis of similarities, analyze clusters and describe and visualize data (Nesterak, 2010, p. 232).

2. Business Performance Management as a new generation of Business Intelligence systems

Recently, apart from Business Intelligence, Business Performance Management - BPM systems have been gaining popularity (Miranda, 2004, p. 58). They are treated as the next stage of Business Intelligence development. They combine strategy, advanced information technology and management methods, permitting an effective execution of the set business objectives (Ariyachandra, Frolick 2008, p. 113). BPM is a new phenomenon in business analytics. The first systems of this type appeared nearly 10 years ago. So far, these systems have not been clearly defined. The main sources of information on them are still studies of the companies offering such solutions. Still, there are many discrepancies and questions concerning these systems, such as: what is their relation with Business Intelligence systems, what is their main objective, what is their methodology, as well as how can we integrate them with other management systems? Below, an attempt is made to answer the asked questions.

According to Business Performance Management Standards Group, BPM is: "a framework for organizing, automating, and analyzing business methodologies, metrics, processes, and systems to drive the overall performance of the enterprise. It helps organizations translate a unified set of objectives into plans, monitor execution, and deliver critical insight to improve financial and operational performance" (Business Performance Management… 2005).

For Business Performance Management, the following definitions are used interchangeably: Corporate Performance Management (CPM) or Enterprise Performance Management (EPM) (Hossain, Prybutok, 2008, p. 3463).

The main meaning of Business Performance Management comes down to understanding the key aspects of the implemented business processes and translating them into "language" of an analysis supporting decision-making processes.

Business Performance Management systems include six basic elements: decisions, strategic objectives, measurement systems, data, visualization tools as well as computer software (Collins, 2006, p. 27).

The first of the mentioned elements is related to the purpose of the use of BPM solutions, which is better business decision-making, ensuring an effective execution of the adopted strategy. BPM are a category of decision support systems. Actions of these systems come down to the execution of three basic

functions: gathering information on results, making on their basis decisions and implementing these decisions also combined with monitoring their results.

Strategic objectives are the main framework of the entire system. They are the basis for assessment of actions. The expected results arise from the adopted objectives. Monitoring results and making decisions on this basis results in pursuit of the set objectives. Thus, development of the strategy should be treated as a main, output element of BPM systems.

One of the basic elements of BPM systems are measurement systems, namely methods through which results are measured and analyzed. The most popular tools in this respect include: Balanced Scorecard (BSC), Six Sigma, Activity-Based Costing (ABC), Total Quality Management (TQM), Economic Value Added (EVA), Theory of Constraint (An overview of Business, Corporate and Enterprise…, 2010). From among the listed methods, BSC is most often applied. It consists in translation of the mission and the strategy into objectives as well as a system of key performance indicators specified in four perspectives: learning and developing, internal processes, customer and financial. Six Sigma is a tool of solving problems and reducing quality costs. This is a statistical method. Its essence comes down to testing average distance between the distribution of results and the mean or the center of distribution. The term "6 sigma" means the distance of six standard deviations between the mean of distribution and the nearest specification limit. This is the highest standard of results for the process. The likelihood of defect occurrence in this case is like 1 in several millions. ABC is a method of cost analysis in terms of their centers. It enables measurement and analysis of indirect costs (production and non-production costs) and their assignment to cost objects – goods, services, customers, distribution channels. TQM is a concept of organizational management, focused on quality, based on the participation of all members of the organization, and focused on achievement of long-term success, owing to customer satisfaction as well as benefits for all members of the organization and the society. The activities in this respect consist in continuous improvement in quality and effectiveness of activities. It requires current monitoring and analysis of the level of customer satisfaction and effectiveness of implemented processes. EVA is one of the most popular methods of goodwill measurement. It is based on a company achieving return on the whole invested capital, which is greater than its cost. Theory of Constraints is a management method aimed to obtain long-term profits by appropriate management of the constraints existing in the company, i.e. "bottlenecks" that occur in management systems, production processes and/or distribution processes, and which cannot be already eliminated. The presented methods have been already broadly popularized in the subject literature.

Another BPM element covers data. In contemporary enterprises, the scope of data that are used in different analytical objectives is usually very wide. It often results in a phenomena of information overload, namely provision to the

decision-maker of more information than he or she wants or can use. In BPM systems quantitative data are used, on the basis of which key performance indicators (KPI) are created. These measures are specified individually for different processes in connection with objectives and specific character of the process (Czapla, Malarski, 2009, p. 116).

KPI should concentrate on critical activities influencing the achievement of success at present and in the future. These measures should:

- have both financial and non-financial character,
- enable the performance of frequent measurements (every day, every week),
- indicate clear responsibility of people and teams,
- be comprehensible for all employees (Parmenter, 2007, p. 5).

There should not be too much KPIs, but their too small number may also prevent proper monitoring of processes. According to the research by TDWI, the median of the number of KPIs implemented in enterprises is 20 (Eckerson, 2004, p. 23).

An extremely important element of BPM is visualization of the analyses' results. Its purpose is to ensure the use of results of analysis by each employee. Thus, they all need to be presented in a comprehensible form as well as a form affecting his or her perception. For that purpose, management dashboards and scorecards are used, which, through forms of potentiometer, charts, phenomenon intensity scales, legibly indicate determined situations and phenomena.

Processing data within BPM is based on the use of Business Intelligence systems. For this reason, in many studies these systems are treated as identical (Orzechowski, 2005, p. 66; Surma, 2006, p. 801; Kochański, 2005, p. 59). However, in specialized studies concerning the discussed issues emphasis is made on clear differences between Business Intelligence and Business Performance Management systems, and the latter systems are indicated as a wider category, being the result of development and expansion of the use of Business Intelligence.

The first difference indicated between BI and BPM systems concerns the scope of use. BI systems are usually tools used at the level of particular organizational units (departments), BPM systems, on the other hand, are used at the level of the whole organization. BI systems are usually used by analysts, BPM solutions, on the other hand, are available for all employees. The scope of data processing in the case of BPM is also more complex. In BI these are, above all, the results of analyses. In BPM, on the other hand, specific recommendations and indications of activities are obtained. It is related to the way of presenting the data. In the case of BI, results are presented in the form of various statements, comparative indicators. In BPM it is a more synthetic information in the form of KPIs, presented in the form of *management dashboard* and scorecards. BI systems are based, above all, on historical

analysis of events. Meanwhile, BPM systems refer to the current time as well as introduce the elements of forecasting specific phenomena. Thus, it may be stated that BPM is a concept the objective of which is to obtain more synthetic information than in the case of BI, in the form of specific decision-making indications related to the strategy being executed (Ballard, White, McDonald, Myllymaki, McDowell, Goerlich, Neroda, 2005, pp. 28-29).

Currently, the main providers of IT related to BPM are: Oracle, SAP and IBM (Gartner, 2011).

The enterprise management process on the basis of BPM systems is presented most often in the form of four stages: strategize, plan , monitor and analyze, take corrective action (figure 2) (Ariyachandra, Frolick, 2006, p. 43). This depiction is consistent with the organizational improvement cycle PDCA, by Deming.

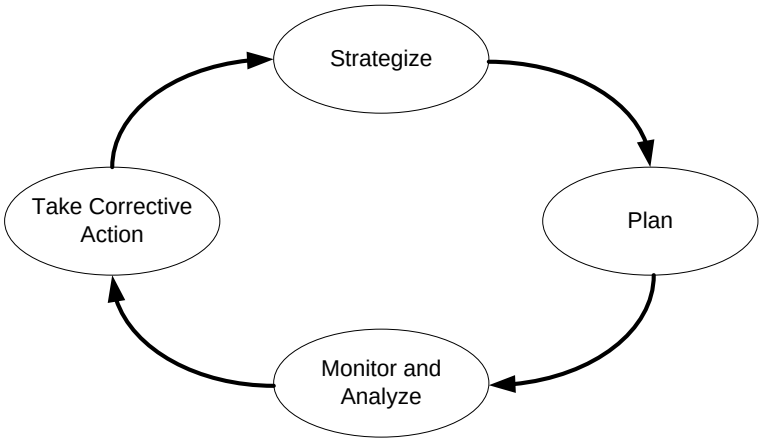

Figure 2
Proces BPM
Source: Ariyachandra T., Frolick M.N., Business Performance Management: One Truth, "Information System Management" Winter 2006, p. 43.

The first stage consists in development of the strategy of the organization and setting out of key measures that will permit assessment of pursuit of the adopted objectives. This stage plays a crucial role for the whole process. Planning is development of programs of implementation of the adopted strategy and achievment of the assumed results. The main task of this stage is to translate strategic business objectives into the operating level. The plans are developed separately within different business units. Monitoring and analysis consist in assessing implementation of the adopted strategy and operating activities. Assessment proceeds with the use of measures designated at the first stage. As a result of the assessment, different problems and hazards are identified, preventing achievement of the assumed objectives. The outcome of monitoring and assessment are undertaken corrective actions, focused on removal of problems and hazards hindering implementation of strategic plans.

The use of *Business Performance Management* systems is related to many benefits, both at the strategic and operating level.

The most frequent benefits of BPM systems include:

- better control and possibility to affect business processes in the company,
- integration of many independent processes into one coherent system,
- improvement in strategy implementation,
- holistic approach to management of an organization,
- quicker reacting to specific events,
- improvement in strategic planning,
- clear indication of reasons for specific events,
- improvement in business results,
- improvement in coordination of group work (Eckerson, 2004, p. 8; Business Performance Management. New generation...).

3. Areas of controlling supported by Business Intelligence and Business Performance Management systems

Controlling as a tool strictly related to the information - decision-making process cannot be effective without access to reliable information. The support of controlling will be effective if the IT system used by the enterprise is flexible and dynamic. Such system is Business Intelligence software for controlling, namely analytical tools supporting tasks and functions of this management concept. Additional, a few detailed tasks can be distinguished, which should be carried out by IT system with regard to support of controlling, consisting in internal transformations (Marciniak, 2010, p. 271):

- from hierarchical information to information separated according to "sources" and "immersion" in the organizational network of the research entity,
- from overall information to information on fractal process chains,
- from comprehensive information to problem-focused information,
- from firm and fixed information to dynamic information, capable of adapting to a decision-making situation.

In addition, IT systems of controlling, with regard to execution of given projects or undertakings, should support: diagnosis of the needs for activities, selection, filtering and obtaining of information as well as knowledge from various sources, processing of such information into the form focused on tasks that can be specified depending on the user, generation of solutions, decision-making in accordance with the adopted priority objectives, further processing of

selected options of solutions and transmission of information to the selected organizational units.

Controlling software supports mainly two key actions related to the provision of multisectional planning -output information and other analytical-optimizing works. It can be also assumed that IT support for controlling relates to the layer of: source data, service of budget model and analytical -information model (Nowak, 2003, p. 234). The layer of source data can be compared to the whole foundation of the system supporting controlling. Under it, mainly finance and accounting data, production data and data associated with warehouse management are distinguished. Planning and control require, in particular, correct and detailed information. The most frequent problems in provision of data relate to too late reaching data, too high level of detail of data, focus on the past rather than on the future, or mutual exclusions. In order to eliminate the above possible problems, an appropriate procedure of obtaining information should be adopted. We may also distinguish main areas directly related to the enterprise operations that are supported by controlling applications, such as: analysis of sales revenues, cost analysis, budgeting, cash management , and, in some cases, consolidation of financial statements. Analytical possibilities of controlling systems may be used in (Nesterak, Miller, 2010, pp. 367-379):

- presenting simultaneously, in many dimensions, cost items (cost center, project, and others) or sales volume (product, customer, time and other),
- compiling results of each of profit centers and investment centers, at the time and at various levels of detail of a given item,
- probing into and consolidating revenues and margin according to the hierarchy of dimensions (places of sale through the group of customers to selected customers),
- consolidating cost budgets of secondary cost centers into budgets of superior cost centers, which is useful when negotiating budgets,
- consolidating revenue-cost budgets of secondary profit centers into budgets of secondary profit centers, which is useful when negotiating budgets,
- compiling the planned and actual data about revenues and costs simultaneously in many dimensions, and going deep in the hierarchy of the defined dimensions, which enables to determine reasons for deviations,
- identifying reasons for deviations from the plans by means of a set of reports,
- compiling various versions of budgets simultaneously in many dimensions and comparing corresponding synthetic ratios, which enables to choose the suitable budget option,

- presenting structure of costs, revenues and profit in the percentage perspective simultaneously in many dimensions and at various levels of detail,
- presenting dynamics of costs, revenues, results, financial statement items at time and at various levels of detail,
- generating reports on the plan execution, with a possibility of their making available in the web browser.

Other IT tools of Business Intelligence and Business Performance Management class, supporting key tasks of controlling, which are worth paying attention to and using in practice, include also:

- management dashboards used for the purpose of clear presentation of key business data of the enterprise; additionally, a constituent part of this type of tools are the so-called critical success factors, used in order to assess particular parameters of processes, such as: time, flexibility, quality or cost of implementation; in consequence, it is possible to conduct ongoing monitoring and analysis of processes,
- corporate portals used for presentation and distribution of information;
- balanced scorecard used to manage the business strategy through a system of logically interrelated effectiveness ratios, visualization and explaining of strategic plans and control of their execution;
- alerts by means of the so-called agents of notification, used to inform automatically on events, and by means of agents of prediction, namely a tool responsible for warning against likely changes and when predefined key performance indicators are exceeded.

Conclusion

In the opinion of Authors, the scope of use of Business Intelligence and Business Performance Management system in controlling will keep on expanding. A key issue to solve by these systems is to make it possible for the enterprise to record and track the economic result, and then to introduce BI and BPM solutions to the issues of internal process optimization, such as chains of deliveries, production processes or sales. The designers of these systems pay a great attention to creation of a friendly interface. At the same time, they assume that for BI and BPM solutions specialized knowledge related to computer science is unnecessary. The intuitive character of the solutions offered on the market enables to win new customers, so far afraid of complicated solutions, and, on the other hand – facilitates implementation and training of users. The weight of using these systems is presently transferred from purely technological into substantive aspects. The term "how to analyze data" changes into the problem "what to analyze data for?".

Presently, many companies, including small-sized, decide to implement at least some functionalities related to gathering and analyzing historical data or forecasting the future. At the same time, it is significant that the decision on the system implementation be conscious and well thought out, and the enterprise that decides to take such step be prepared for it in a complex way. BI and BPM systems which are not adjusted to the specific nature of a given company will not be entirely used, wrongly used and will encounter a natural resistance of the employees.

References

1. An overview of Business, Corporate and Enterprise Performance Management, available: http://www.smartkpis.com/blog/2010/06/07/an-overview-of-business-corporate-and-enterprise-performance-management/, (cited: 01.03.2012).
2. Ariyachandra T., Frolick M., Critical success factors in business performance management: Striving for Success, „Information Systems Management" 2008, No 25(2).
3. Ariyachandra T., Frolick M.N., Business Performance Management: One Truth, "Information System Management" Winter 2006.
4. Ballard Ch., White C., McDonald S., Myllymaki J., McDowell S., Goerlich O., Neroda A., Business Performance Management…Meets Business Intelligence, International Business Machines Corporation, US 2005.
5. Berry M.J.A., Linoff G., Data Mining Techniques for Marketing, Sales and Customer Suport, Sales and Customer Support, John Wiley & Sons, Inc. New York, 1997.
6. Business Performance Management. Nowa generacja systemów Business Intelligence, Business Vision, available: http://www.businessvision.pl/index.php?option=com_content&task=blogcategory&id=21&Itemid=48, (cited: 01.03.2012).
7. Business Performance Management: Industry Framework Document, BPM Standard Group (2005), available: http://bpmstandardsgroup.org (cited: 20.06.2011).
8. Collins B., The Essential Elements of Business Performance Management, "DM Review" 2006, No 10.
9. Czapla T., Malarski M., Zasady budowania systemu wskaźników pomiaru efektywności procesów biznesowych, (w:) Metody zarządzania procesami w świetle studiów i badań empirycznych, Pod redakcją J. Czekaja, „Studia i Prace Uniwersytetu Ekonomicznego w Krakowie", nr 5, Kraków 2009.
10. Eckerson W., Best Practices in Business Performance Management: Business and Technical Strategies, "TDWI Report Series", March 2004.
11. Gartner, ***Magic Quadrant for Corporate Performance Management Suites***, 2011, available: http://www.gartner.com/technology/media-products/reprints/tagetik/vol3/article3/article3.html, (cited: 01.03.2012).
12. Hossain, M. M., Prybutok, V. R., Integration of the business performance management framework and the Malcolm Baldrige National Quality Award framework to address enhanced competitiveness (w:) Proceedings of the Decision Sciences Institute. Baltimore, Maryland 2008.
13. Inmon W.H., Building the Data Warehouse, 2000, available: http://inmoncif.com/inmoncif-old/www/library/whiteprs/ttbuild.pdf) (cited: 2012.03.08).
14. Kochański T., Informacja i wiedza w koncepcji Business Intelligence, "Ekonomika i Organizacja Przedsiębiorstwa" 2005, nr 11.

15. Marciniak S., Rola informacji w controllingu (w:) Zarządzanie zasobami informacyjnymi w warunkach nowej gospodarki, red. naukowa R. Borowiecki, J. Czekaj, Wyd. Difin, Warszawa 2010.
16. Miranda S., Beyond BI: Benefiting from Corporate Performance Management Solutions, "Financial Executive" 2004, No 20(2).
17. Nesterak J., Business Intelligence jako narzędzie wspierające decyzje zarządcze w firmie, „Zeszyty Naukowe, Prace z zakresu ekonomiki i organizacji przedsiębiorstw", nr 836, Uniwersytet Ekonomiczny w Krakowie, Kraków 2010.
18. Nesterak J., Miller W., Business Intelligence informatycznym instrumentem controlling (w:) Restrukturyzacja w obliczu nowych wyzwań gospodarczych. Zarządzanie – strategia, editors Borowiecki R. and Jaki A., Uniwersytet Ekonomiczny w Krakowie - Katedra Ekonomiki i Organizacji Przedsiębiorstw - Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2010.
19. Nowak E. (editor), Controlling w przedsiębiorstwie, koncepcje i instrumenty, Ośrodek Doradztwa i Doskonalenia Kadr Sp. z o.o., Gdańsk 2003.
20. Orzechowski R., eBusiness Intelligence, „E-mentor" 2005, nr 2.
21. Parmenter D., Key Performance Indicators, Wiley&Sons, Chichester 2007.
22. Surma J., Systemy wspomagania decyzji biznesowych w kreowaniu wartości firmy, (w:) Strategie wzrostu wartości przedsiębiorstwa. Teoria i praktyka, Praca zbiorowa pod redakcją E. Urbańczyka, „Zeszyty Naukowe Uniwersytetu Szczecińskiego. Prace Instytutu Ekonomiki i Organizacji Przedsiębiorstw" nr 434, tom 2, Szczecin 2006.
23. Ufford, D.Q., Business Intelligence, The Umbrella Term, BWI-werkstuk, 2002; available: http://www.few.vu.nl/onderwijs/stage/werkstuk/werkstuk-quarles.doc, (cited 22.02.2012).
24. Vierdoes N., Content Intelligence, Vrije Universiteit Amsterdam – Faculty of Sciences – Department of Computer Science, Amsterdam August 2007.

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THE APPLICATION OF NEURAL NETWORKS IN CORPORATE GOVERNANCE

APLIKÁCIA NEURÓNOVÝCH SIETÍ V RIADENÍ PODNIKU

Tomáš KLIEŠTIK – Miloš BIRTUS

Abstract
This article dealt with artificial intelligence. The neural networks application in economic sciences sprang out of two substantial facts. First of them was significant progress in exploring of this technology and its possible usage. Further significant impulse was triggered by rapid development of computing machinery and subsequent availability of sufficient computing performance it brought about to ordinary users.

Keywords: neuron, neural network, artificial intelligence, statistical methods, synapse, error resistance

Abstrakt
Predkladaný článok sa zaoberá aplikáciou neurónových sietí a umelej inteligencie v riadení podniku. Uplatnenie neurónových sietí v ekonomických vedných disciplínach vyplynula z dvoch kľúčových faktov. Prvým je významný pokrok v skúmaní tejto technológie a jej možnom využití. Ďalšie významné impulzy boli vyvolané rýchlym rozvojom výpočtovej techniky a následnej dostupnosti softvéru v predmetnej oblasti pre bežných užívateľov.

Kľúčové slová: neurón, neurónová sieť, umelá inteligencia, štatistické metódy, synapsia, odolnosť voči chybám.

1. Introduction

Neural networks in social sciences facilitate solving classification as well as prediction tasks, creating models of linearity of variables, picturing the latter numerically and graphically, etc.. Wherever the sience of economics uses statistical methods, the neural networks constitute broadening on the scale of analytical tools. Under certain circumstances, the neural networks may substitute for e.g. discrimination, burst, and factor analysis, as well as regression analysis, analysis of time series and the like. However, it follows from the outcomes of comparative tests in comparison with outputs obtained from „classic“ statistical methods and neural networks regarding identical tasks that it is not possible to prefer a priori neither of the aforementioned methods. Successful usage of either method depends especially on the „nature“ of problem being solved. Generally, the neural networks are more successful in problem solving even in cases where the input data contain scratched information, incomplete time series and the like rather than statistical methods.

As far as sufficient accuracy of relevant data is provided for, the outcomes speak for application of neural networks.

Artificial neural networks are an attempt at imitating cognitive ability of human brain through learning method of trial and error. Biological neurons are 5-6 serial times slower than silicon logical gates which constitute building blocks of microprocessors. However, the brain compensates for its relatively sluggish activity by employing a huge amount of neurons and taking advantage of their massive cross-connection. It is estimated the cerebral cortex of a man contains serially 10 billion neurons and 60 trillion synapses. The brain is able to organize neurons in such a way as to enable them to perform activities ascribed to them multiple times faster than the fastest computers we have today.

Neural networks are classified as analytical tools, which can be included under the notion of artificial intelligence. Artificial intelligence is a name for group of procedures and algorithms emulating human routes of thinking. Mechanisms emulating human activity have occupied human imagination from the earliest times. Works of ancient authors provide us with first references to the subject. Philosophers such as Decartes, Pascal, Hobbes and La Maprie were dealing with the question „Are machines able to think?“ in the 17th century. Their conclusions were purely philosophical, focusing on questions whether the machines are able to think, not on how to attain this reality. Construction of first computing machine can be considered a breakthrough event in this respect, the machine being based on principle of mechanical turning of wheels thus enabling adding and subtracting.[1] Next step was design of *analytical engine*[2]. Since 1930s, increased possibilities for usage of computing technologies have given rise to attempts at automated solutions of problems in such a way, as would be solved by a man employing his/her intelligence. To the contrary, major progress took place in the beginning of Cold war when both belligerent camps were trying to decode coded messages of the respective adversary. First works on artificial neural networks models were published by American W. S: McCulloch. In 1943, he and his student W. Pitts[3] constructed first simple but still used neural model. On its basis, B. Widrow later developed first artificial neural networks with ability to solve practical tasks. Neural network called percepton was invented in 1958 by a psychologist F. Rosenblatt and the purpose of its existence was supposed to be modeling of procedures during which human brain processes visual data and learns to recognize objects. Perception, as constructed by Rosenblatt, was radically criticized at the end of the 1960s by M. Minske and T. Pappert, who demonstrated the category of tasks the perception network was able to solve was rather narrow. This valid criticism of theirs caused attenuation of interest taken in neural networks for some period of time. The topic popularity comeback dates back to late 1980s and is tied to

[1] Constructed in 1342 by Blaise Pascal.
[2] Designed in 1833 by Charles Babbage.
[3] Only 17 years old at the time.

publication of back-propagation algorithm by D. Rumelhart, G. Hinton, and R. Williams. Ever since, there have been several authors publishing significant works elaborating on the issue of artificial neural networks. Majority of them used to work or still works at MIT, the works in question being authored by G. Hopfield, T. Kohone, D. Rumelhart, S. Haykin and others.

2. Biological and artificial neurons

It is possible to compare biological and artificial neurons only in view of basic principles of their functioning. Biological neurons are by far more complex than artificial neurons.

Denoting the system as neural networks follows from their being inspired by neurons constituting human nervous system. Each biological neuron is composed of the following:

- Several ***dendrites*** - inputs,
- ***soma*** – body (processing centre),
- one ***axon*** – output,
- ***synapsis*** (terminal).

Neuron, in its simplified form, is depicted on fig. 1. Neuron processes information from a set of richly branching dendrites (inputs) and its output pieces of information are further distributed through axons to terminals (synapses). These synapses affect dendrites of further neurons. The synapses are one of key elements of brain structure as well as structure of individual neurons. Neuron is able to emit output signal only if the output signals are sufficiently strong to activate a nerve cell, i.e. such signal has to transgress certain *treshold value*, necessary to excite the cell into reacting. Human brain activity is facilitated by a huge number of these connections which create man's life including his/her learning process. Their activity springs from electrical chemical reactions.

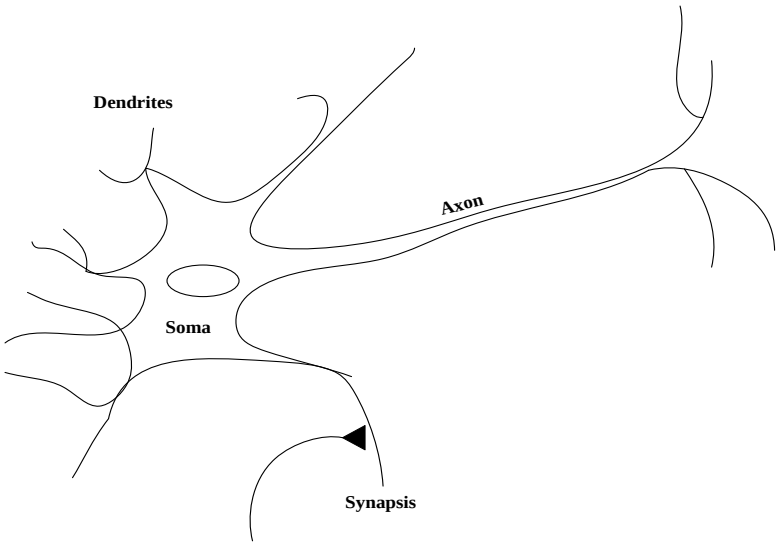


Figure 1
Sketch of biological neuron
Source: Self processed

An artificial neuron works according to similar principles as biological one. Input pieces of information are weighed on *weights, treshold value* is subtracted and by employing the *activation function,* the signal is transformed into an output signal. Based on biological interpretation of the neural function, simple version of mathematical neural interpretation has been configured.

In spite of the fact the topic of neural networks usually invokes images of computers able to think independently, the reality is different. Neural networks are, generally, very simple systems. Despite their effort of precise imitation of human cognitive abilities, so far, they can perform this process in a very limited way only and in a very simple manner, too.

Often, neural networks are denoted as „**black box**", since it is impossible to know the inner structure of the system in detail. With respect to the inner structure of the system modelled by „black box", we only assume a few predictions enabling description of how does a system of functions behave, where the functions facilitate transformation of input – output. They are applied to all cases of modelled process, where substantial task is performed by chance and determining dependencies are so complicated and interconnected, we are not able to separate and identify them analytically.

The neural network (not anymore from the biological point of view) is a device for modelling of an activity in course of which the brain performs useful calculations based on the **process of learning.** The neural network includes massive cross-connection of individual computing elements (neurons). Viewing the neural network from the standpoint of adaptive device, it can be defined as follows:

Haykin, S[4]

„Neural network is a massively parallel distributed processor being able to store knowledge acquired by experience, available for further use. It is similar to brain in two aspects:

- *the network acquires knowledge in the process of learning,*
- *the knowledge is stored through utilizing inter-neural joints known as synaptic weights"*

Another option is to define neural network from the graph theory point of view

Hecht, R.[5]

„Neural network is a structure serving parallel and distributed information processing which takes shape of an oriented graph having sub-definitions and limitations as follows:

- *graph nodes are called computing elements,*
- *graph edges are called joints,*
- *each computing element may contain variable number of input joints,*
- *each computing element may contain variable number of output joints, however, signals exciting them have to be the same - in fact, each element has a sole output joint which may further ramify and form multiple output joints containing identical signal,*
- *computing elements may have local memory,*
- *each computing element contains transfer (activation) function, which may use local memory, input signals, and which forms output signal of the computing element."*

We can imagine the simplest artificial neural network – the percepton (view fig. 2) as input of R values designated as $\boldsymbol{p_1, p_2, p_3, ...p_R}$, where these values are multiplied by weight factors $\boldsymbol{w_1, w_2, w_3, ...w_R}$. Likewise, neuron's behavior is also influenced by the so called treshold value $\boldsymbol{b}$, securing rise of the input into activation function. The following then holds true:

$$a = w_1 \cdot p_1 + w_2 \cdot p_2 + w_3 \cdot p_3 + ...w_R \cdot p_R + b = \sum_{i=1}^{R} w_i \cdot p_i + b \qquad (1)$$

[4] HAYKIN, S Neural Networks, A Comprehensive Foundation, Macmillan College Publishing Company, New York, 1994

[5] HECHT, R Neurocomputing, Addison-Wesley Publishing Company, Reading, Massachusetts, 1990

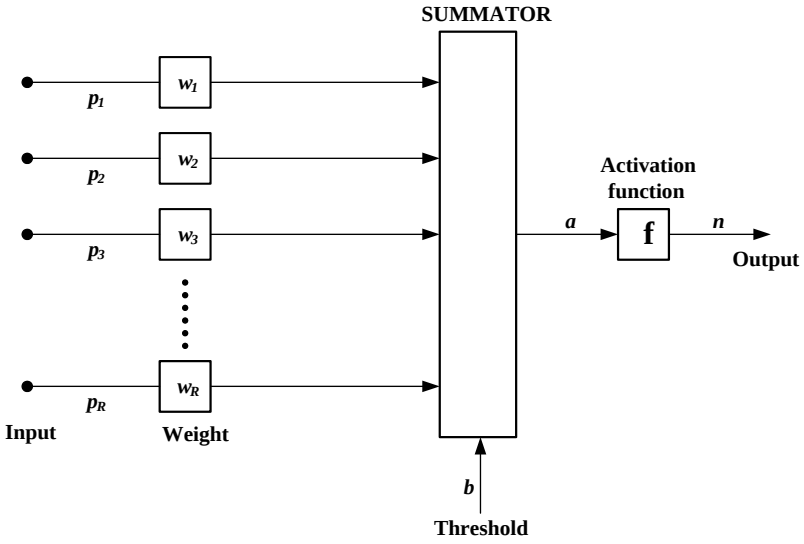


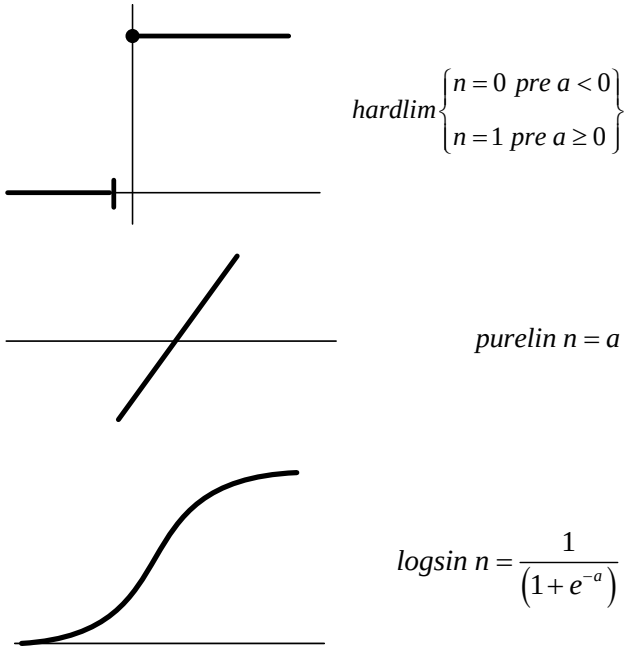
Figure 2
Single-layer neural network – percepton
Source: Self processed

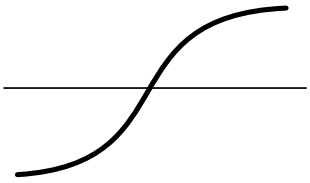
The following also applies to the output:

$$n = f(a) \qquad (2)$$

While various so called transfer functions ***f*** are employed, the most important of them being: hardlim, purelin, logsin and tansing.

While various so called transfer functions ***f*** are employed, the most important of them being:





$$tangsin = \frac{e^{a} - e^{-a}}{e^{a} + e^{-a}}$$

Therefore, the equation of percepton's behavior may be written in vector form:

$$n = \mathrm{f}(\mathrm{w.p} + \mathrm{b}) \tag{3}$$

We are able to reformulate the neural model of fig. 14 with the use of simple transformation:

$$v = a + b \tag{4}$$

$$v = b \cdot 1 + w_1 \cdot p_1 + w_2 \cdot p_2 + w_3 \cdot p_3 + ...w_R \cdot p_R = \sum_{i=0}^{R} w_i \cdot p_i \tag{5}$$

,where **v** is the *internal activity level* of the neuron. Subsequently, the reciprocal writing of equations (50 and 51) describing neuron's output signal is:

$$n = f(v) \tag{6}$$

In spite of neural networks falling short of perfection of even a tiny group of biological neurons, they are able to provide us with complex problem analysis which would otherwise be hardly if at all grasped by standard techniques. With help of neural networks, any transportation enterprise is able to solve a wide variety of problems, e.g.: evaluation of investment shares, estimation of real estate property prices, real estate classification, bankruptcy prediction, prediction of SKK/USD exchange rate, SAX index prediction, fuel prices prediction, risk assessment of prospective clients, establishing of optimum performance volumes, making decision on the manner how to approach clients, etc.

3. Conclusion

As mentioned before, „quality" of results attained by utilization of neural networks is affected by multiple factors. If we omit factors beyond our control, e.g.: type of problem being solved, ambient conditions, etc., we are able to influence outcomes of the problem we are solving by appropriate choise of network typology, choosing suitable activation functions, or picking some of the neural network's type of learning. There does not exist any unequivocal instruction or procedure how to apply individual network typologies, activation functions, and learning types. We only know, for example, the GRNN network type is not suitable for solving classification tasks; for non-controlled learning (self-organization) we use Kohen's network; Kohen's network can only have

two layers (input and output with radial units), the number of neurons in hidden layer of probability network PNN has to equal the number of entering training data, etc. Therefore, it is advisable to use the trial and error method and to apply a particular task to several neural network types, learning types, and activation functions. We further compare results obtained in this way among themselves. One of the criteria employed may be the number of erroneously classified units when solving classification tasks (e.g. bankruptcy-prosperity, whether to invest or not to invest) and summation of errors*errors when predicting time series. Majority of software products contains an implemented function *Automatic Designer*, which will automatically choose for us an appropriate neural network (type, number of layers, number of neurons in individual layers), learning type and activation function, thus setting us free from a rather lengthy and difficult computing task. It is still advisable to compare even solution obtained in this way with results obtained by utilization of higher statistical methods. Only in cases of higher quality of the results obtained by utilizing neural networks may they serve the basis for making a decision.

The article is an output of scientific project VEGA 1/0357/11 Klieštik, T. and col.: Research on the possibility of applying fuzzy-stochastic approach and Corporate Metrics as tools of quantification and diversification of business risk.

References

1. HAYKIN, S: *Neural Networks – A Comprehensive Foundation*, Macmillan College Publishing Company, New York, 1994, ISBN 13-889-567-7
2. HECHT, N.R.: *Neurocomputing*, Addison-wesley Publishing, Boston, 1990, ISBN 978-02-0-1093-55-1
3. *MCNELIS, P. D.: Neural Networks in Finance: Gaining Predictive Edge in the Market, Academic Press New York 2005, ISBN978-012-4859-678*
4. SMEJKL, V. – RAIS, K.: *Řízení rizik ve firmách a jiných organizacích*, GRADA, Praha 2010, ISBN 978-80-247-3051-6
5. TRIPPI, R. R.: *Neural Networks in Finance and Investing*, McGraw-Hill Publishing, New York 1996, ISBN 1-55738-919-5
6. TRIPPI, R.R., LEE, J. K.: *Artificial Intelligence in Finance and Investing*, IRWIN Publishing, Chicago 1996, ISBN 1-55738-868-7
7. TURBAN, E. – ARONSON, J. E.: *Decision Support Systems and Intelligent Systems*, Prentice Hall Publisher, ISBN 0-13-781-675-8, New Jersey 1998
8. YU, L. - WANG, S. - LAI, K. K.: *Foreign-Exchange-Rate Forecasting with Artificial Neural Networks*, Springer New York, 2010, ISBN 978-144-194-404-7

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INOVATIONS OF FINANCIAL DISTRESS PREDICTION MODELS

INOVÁCIE MODELOV PREDIKCIE FINANČNEJ TIESNE

Michal KRAVEC

Abstract
This paper aims to describe evolution of financial distress prediction models. Methodology of the models was excluded. The methods were grouped by the classification of Kumar –Ravi (2007) into statistical, intelligent, hybrid approaches and those which cannot be categorized by the taxonomy. It is concluded that further hybridization of models will be realized in the future. Qualitative and non-financial variables are suggested being included in models. The role of an expert and experimental knowledge is recommended that it should be paid more attention. Some other critique is provided such as financial reports contain only past and present information.

Keywords: innovation, financial distress prediction, statistical models, intelligent models, hybrids.

Abstrakt
Cieľom tohto príspevku je popísať evolúciu modelov predikcie finančnej tiesne. Metodológiu jednotlivých modelov sme nezahrnuli. Tieto metódy sme rozdelili podľa klasifikácie práce Kumar – Ravi (2007) na štatistické, inteligentné, hybridné prístupy a tie, ktoré nemôžeme kategorizovať podľa tohto delenia. Dospeli sme k záveru, že v budúcnosti sa uskutoční ďalšia hybridizácia modelov. Navrhujeme, aby do modelov boli zahrnuté kvalitatívne a nefinančné premenné. Odporúčame, aby sa úlohe expertov a ich vedomostiam venovala väčšia pozornosť.

Kľúčové slová: inovácia, predikcia finančnej tiesne, štatistické modely, inteligentné modely, hybridy

Introduction

There are many models that attempt to predict bankruptcy, corporate failure or to create early warning system. These notions will be used interchangeably since the focus is concerned when financial difficulties occur in general. Investopedia (2011) defines financial distress (FT) has "A condition where a company cannot meet or has difficulty paying off its financial obligations to its creditors". All thesemodels will be noted as financial distress prediction models (MPFT). The aim of this article is to depict development of the methods. For this purpose only pioneers are mentioned in the field of early detection of a failure and the quoted techniques are not explained nor who developed them out of the field of finance. Methodological aspects are rather

recommended being studied especially in cited sources. Classification of Kumar – Ravi (2007) is used in the whole paper into groups: statistical, intelligent[1], hybrid models and those which cannot be categorized by the taxonomy. Accuracy of models is perceived in the paper as a capability to avoid Type I and Type II errors.Statistical approaches are those that use variables from financial reports (usually financial reports) and obtain outcomes by means of diverse statistical methods. Intelligent models use computer as artificial intelligence which attempts to substitute human brain and thinking. Hybrid models are a combination of several intelligent models or there are also statistical methods and at least one intelligent approach.

1. Statistical models

The evolution of the models will be described from 1966. It is claimed that Tamari (1966) has done one of the effort to examine financial health[2] by modern statistical FT analysis. Zalai a kol. (2010) classify it as standing model. Beaver (1966) published a study that investigated financial ratios like Tamari but he used univariate discrimination analysis (UDA). Altman (1968) employed multivariate[3] discrimination analysis (MDA). His model was called as Z –Score. Many modifications of MDA were utilized in various papers and FT was studied in different industries[4]. Adaptations of Z –Score were developed for Czech and Slovak stakeholders. Indices IN[5]are called in Czech republic viz.: IN IN 95, IN 99, IN 01 a IN 05. In Slovakia CH – Index (Chrastinová, 1998) is known for agricultural companies. The model has not been employed in business practise. The reason could be too specific application. Meyer - Pifer (1970) applied regression analysis[6]. Altman (1977) examined quadratic discrimination analysis (QDA). Altman - Haldeman - Narayanan (1977) constructed a new ZETA ™ [7]model. MDA and QDA were observed in the model whereas QDA showed more accuracy. Another approach is Kralicek'squick test that is exercise in German speaking countries[8]. Martin (1977) presented logistic regression or logit model (logit)[9]. He examined probability of FT of commercial banks. Ohlson (1980) applied the model for non-financial firms. Therefore it is denoted as "O – Score". Dietrich – Kaplan (1982) developed a simple linear model with three variables. Barniv – Raveh (1989) presented Nonparametric Multiple

[1] Aziz - Dar (2006) denote these models as "Artificially intelligent expert system models" (AIES).
[2]A definition of financial health can be found e.g.Investorwords (2010) is used.
[3]Discrimination analysis is denoted as "DA". Sometimes it is denoted multiple DA. MDA and UDA belong to linear DA (LDA).
[4]Raffnson (2009) and Kravec (2011) provide reviews of the industries.
[5] Detailed information can be provided in Kotulič – Király – Rajčániová (2010) (KKR) and the most recent is published in Neumaier – Neumaierová (2005).
[6] For instance . Collins – Green (1982) denote the approach as linear probability model (LPM).
[7] ZETA model is a trademark.
[8] See more e.g. Slovak translation Kralicek (1993).
[9] For instance this model denotes as multivariate conditional probability models.

Discriminant Analysis (NPDA). Elliott - Kennedy (1988) a Kennedy (1992) described ordered and unonderedlogit. Zmijewski (1984) examined non-random samples and oversampling bias. Probit model was applied in the paper. West (1985) combined factor analysis (FA) and logit[10]. Mar Molinero – Ezzamel (1991) applied multidimensional scaling (MDS). Haslem – Scheraga – Bedingfield(1992) used canonical correlation analysis and cluster analysis. Kolari a kol. (2002) developed EWS based on logit and trait recognition model. Jones – Hensher (2002) presented mixed logitand they developed two samples model estimation and validation. Canbas – Cabuk – Kilic (2005) designed integrated EWS through combination of MDA, logit and principal component analysis (PCA).

2. Intelligent models

Messier - Hansen (1988) are considered as pioneers in the area of AIES. They proposed machine learning. Odom – Sharda (1990) and Bell – Ribar – Verchio (1990) can be identified as those who started with in neural networks (NN) in MPFT. Tam (1991) employed back propagation trained NN (BPNN). Leshno – Spector (1996) applied functional expansion and joint activation. Rahimian a kol. (1996) employed BPNN, the Analysis Tool for Heritable and Environmental Network Associations (Athena) and single layer perceptron. Piramithu – Ragavan - Shaw (1998) method called feature construction (FC). Zhang a kol. (1999) applied generalized reducing gradient (GRG2). Lam (2004) integrated fundamental and technical analysis in BPNN. Lee – Boot – Alam (2005) compared BPNN, self-organizing feature map (SOFM)[11], MDA and logit. BPNN overperformedhe all other models.

Lee – Han – Kwon (1996) proposed three hybrid BPNN (1) MDA-assisted BPNN (2) iterative dichotomizer 3 (ID3)-assisted BPNN and (3) SOM-assist**e**d BPNN.Serrano-Cinca (1996) designed two hybrid neural systems viz., (i) a combination of LDA with SOM,where LDA calculated the Z-score for each firm,which was superimposed onto SOM to obtain insolvent regions, (ii) a combination of BPNN with SOM.Kiviluoto (1998) applied SOM and proposed its variants for firm bankruptcy prediction. He compared threedifferent SOM-based classifiers viz., SOM-1, SOM-2 and RBF-SOM hybrid with LDA, learning vector quantization (LVQ) and K – nearest neighbour (K-NN).Kaski – Sinkkonen - Peltonen (2001) introduced Fisher information matrix based metric and implemented SOM[12] with it. They used the new method to understand the non-linear dependencies between FT and financial indicators.

[10] The whole model is denoted as "factor-logit".
[11] Self-organizing map is denoted as "SOM"
[12] SOM in the Euclidean metric is denoted "SOM-E", while in the Fisher metric "SOM-F").

Lacher a kol.(1995) propeosedcascade correlation neural network (cascor).Specht (1990) examined prediction of FT through probabilistic neural network (PNN). Yang – Platt- Platt (1999) designed without pattern normalization (PNN*). Baeck – Cho (2003) used Auto-associative neural network (AANN).

Bryant (1997) designed a Case-based reasoning models (CBR) CBR cluster trees were created with three case libraries viz., model-I, model-II and model-III. Jo – Han – Lee (1997) utilized MDA, CBR and BPNN sepately[13]. Park – Han (2002) proposed analytic reasoning model called with analytic hierarchy process (AHP) feature weight approach. Further the scholars proposed CBR for indexing and retrieving similar cases. The AHP-weighted K-NN was compared with pure K-NN algorithm. K – NN hybrid outperformed other models. Yip (2004) applied CBR with K-NN and statistical evaluations for assigning the relevancy of attributes in the retrieval phase of algorithm. Marais – Patel – Wolfson (1984) proposed recursively partitioned algorithm (RPA). They employed (1) recursive partitioning technique and (2) bootstrapping. The scientists used polytomousprobit and recursive partitioning to the data sample. Frydman – Altman – Kao (1985) presented application of RPA compared it with the MDA. the analysis was carried out for misclassification cost of C12 ranging from 1 to 70, where C12 denotes the cost of misclassifying sample belonging to group 1 to group 2. They constructed two variants of discriminant functions viz., DA1 and DA2 and compared them with two RPA models viz., (i) RPA1 with relatively complex tree and (ii) RPA2 with lowest v-fold cross-validation risk. RPA1 model outperformed DA1 and DA2 models for all costs. Also, RPA2 tree turned out to be subtree of RPA1 tree for every cost. They showed that RPA2 had larger resubstitution risk.

Varetto (1998) used genetic algorithms (GA). Nanda – Pendharkar (2001) incorporated misclassification cost matrix into an evolutionary classification system. Shin - Lee (2002) GA-based approach. The rules generated by GA were easily understood and could be used as expert systems (ES). Banks – Abad (1994) proposed the linear programming heuristic to a quadratic transformation of data. Greco – Matarazzo – Slowinski (1998a) (GMS) presented a new rough sets (RS) method based on approximation of a given partition of set of firms into pre-defined and ordered categories of risk by means of dominance relation in place of indiscernibility relation for the evaluation of FT of firms.Dimitras a kol. (1999) used rough set theory. The method applied in the paper was valued closeness relation (VCR). McKee (2000) developed RS where the attribute domains for continuous variables the variables identified by recursive partitioning method were used to develop rough set based modelwere finite sets of low cardinality.Bioch – Popova (2001) proposed a modification of RS. They

[13] Curiosity regarding this paper is that while many authors compare models (see e.g. Kumar – Ravi, 2007 review) and claim that the newest model is the most accurate, these researchers state BPNN is the most accurate and recommend combining models employed in their paper.

used monotone extensions, decision lists and dualizations to compute classification rules that cover the whole space. McKee (2003) developed two various RS models. Michael a kol. (1999) proposed fuzzy rule generator method. Alam a kol. (2000) proposed fuzzy clustering. Andres - Landajo - Lorca (2005) proposed fuzzy rule based classifiers They also used Monte Carlo simulation to measure the effects of sample size variations on the performance of classifiers. The distinctive features of this study were: (1) for each classifier and a wide range of sample sizes, average error rates were estimated from the results of a large number of Monte Carlo simulations. (2) The focus was on business profitability analysis, which was not considered earlier. (3) Their classification problem had a low separability degree. (4) A slight variant of the class of additive fuzzy systems with Gaussian membership functions and consequent normalized to be probabilities was tested. Min - Lee (2005) proposed Support Vector Machines (SVM). He used two kernels for SVM viz., (1) RBF kernel and (ii) polynomial kernel.Ryu – Yue (2005) introduced isotonic separation.Härdle a kol (2009) used smooth SVM.

3. Hybrid models

Back - Laitinen – Sere (1996) developed a hybrid architecture where LDA, logit and GA take care of feature selection and the selected features were used as predictors for BPNN. They employed five hybrid models viz., (1) MDA used for feature selection + MDA used for prediction, (2) logit used for feature selection + logit used for prediction, (3) MDA used for feature selection + BPNN used for prediction, (4) logit used for feature selection + BPNN used for prediction and (5) GA used for feature selection + BPNN used for prediction. They concluded that BPNN and model (5) got improved results than models (3) and (4).Inginzio – Soltys (1996) presented a GA-based approach for the simultaneous design and training of neural networks for firm failure prediction. They called the hybrid neNN as ‘‘ontogenic NN’’.Wallrafen – Protzel – Popp (1996) studied the Genetic algorithm-neural network hybrid (GANN). Jo – Han (1996) designed new architecture by hybridizing case-based forecasting (CBFS), BPNN and DA. The proposed hybrid intelligent system comprised a linear combination of the following five models viz., (i) DA, (ii) BPNN1 (which is BPNN with one hidden layer), (iii) BPNN2 (which is BPNN with two hidden layers), (iv) CBFS1 (which uses a similarity measure to determine the number of base cases) and (v) CBFS2 (which uses all the base cases).Jeng - Jeng – Liang (1997) presented a fuzzy inductive learning method (FILM) that integrated fuzzy set theorywith regular inductive learning process for prediction.Olmeda – Fernandez (1997) proposed a framework to formulate the choice of the optimal mixture of the technologies as an optimization problem and solved it using a genetic algorithm. They combined models in two ways: (i) by simple voting

scheme and (ii) by a compensation aggregation method. The combined models were viz.[14], (1) NN + logit + C4.5 + DA, (2) NN + logit + C4.5, (3) NN + logit + multivariate adaptive regression spline (MARS) + DA, (4) NN + logit, (5) NN + logit + C4.5 + MARS, (6) NN + logit + DA, (7) NN, all methods and (8) NN + logit + MARS.Gorzalczany - Piasta (1999) presented two different hybrid intelligent decision support systems viz., (1) neuro-fuzzy classifier (N-FC) and (2) rough classifier (RC). Elhadi (2000) Elhadi (2000) presented a hybrid system integrating information retrieval (IR) and CBR for legal domain of bankruptcy law.Ahn – Cho – Kim (2000) proposed hybrid models combining rough sets and BPNN. They used (1) BPNN (2) BPNN trained with horizontally reduced information system (RNN1) meaning that the feature selection was performed before training the NN and (3) BPNN trained with horizontally and vertically reduced information system (RNN2). Lin –McClean (2001) developed hybrid models integrating BPNN, a DT (C5.0), MDA and logit in different combinations. The hybrids were: MDA + logit + NN + C5.0, (2) MDA + NN + C5.0 a (3) logit + C5.0. McKee – Lensberg (2002) a hybrid approach by integrating a rough set model with genetic programming (GP).Bian – Mazlack (2003) proposed a new fuzzy-RS-K-NN hybrid. Tung – Quek – Cheng (2004) proposed a new neural fuzzy system viz., the generic self-organizing fuzzy neural network based on the compositional rule of inference, GenSoFNN-CRI(S).Gestel a kol. (2006) used Least squares SVM (LS-SVM). Hsieh – Hsiao – Yeh (2012) applied penalty guided support vector machines optimized by evolutionary artificial bee colony (EABC-PGSVM). Li a kol. (2011) proposed random subspace binary logit (RSBL). Li – Sun (2012) described a new approach called minority-samples generating approach based on a random percentage distance to the nearest neighbour. The model was performed on imbalanced dataset. The study describes a new up-sampling approach, a minority-samples generating approach based on a random percentage distance to the nearest neighbour (MSGA-RPD-NN), and a forecasting method, the nearest-neighbour support vector machine (NNsSVM). Martin a kol (2011) developed hybrid model using GA, fuzzy clustering c – means and MARS.

4. Another approaches

Different methods which are too dissimilar to Kumar – Ravi's categorization are mentioned in this section. Lane - Looney – Wansley (1986) used survival analysis. Lindsay - Campbell (1996) employed chaos theory. A catastrophe theory approach was applied by Scapens – Ryan – Fletcher (1981). Charitou – Trigeorgis (2000) applied option based model. Hua – Sun – Xu (2011) focused on interdependence among supply chain members and bank

[14]Program C4.5 for decision trees (DT) is described in Quinlann (1993). C5.0 is improved program C4.5.

sector (domino effect)[15]. In this case FT is propagated throughout the value chain. Supply chain management and monitoring of business partners are suggested in order avoiding bankruptcy.For instance Mare (2012) studied macroeconomic aspects of FT[15].Martin - Manjula - Venkatesan (2011) developed a business intelligence model to predict bankruptcy using financial domain ontology with association rule mining algorithm. Martin – Lakshmi – Venkatesan (2012) utilized Business Intelligence Models in order to distinguish business performance by using FT prediction.

Conclusion

The focus of this paper was evolution of MPFT in developed countries. In accordance with Back - Laitinen – Sere (1996) ´s statement it is asserted and added that UDA and Tamari´s model was used in 1966-1968.From 1968 to 1980s MDA dominated. In 1980s logit was exploited. In 1990s AIES were mostly applied. Nowadays hybrids are the most popular techniques. Further hybridization is supposed to be realized and statistical models will be only a part of hybrid and not in standalone mode except developing nations and emerging markets like central and eastern countries (CEE). Although Altman - Narayanan (1997) noted that MDA is still the most popular method in bankruptcy identification and it is indicated as a standard for MPFT comparison. Critiques of MDA and other statistical methods such as Nenide – Pricer – Camp (2010) aEisenbis (1977) contend the statistical models were performed and results were induced without the control of the assumptions for realization. This type of MPFT is strongly dependent on the observed industry. BPNN and SVM are particularly exploited. DEA and optimization models are not considered as the most suitable as their purpose is find the most efficient object rather than for detection of financial problems. As well as Varcholová - Dubovická – Kravec (2012) observation of financial and nonfinancial (or quantitative and qualitative) indicators is recommended. Important attributes which should not be omitted are data reliability[16], availabilityand their size (number of indicators, number of observed companies and time period which the figures are obtained for and further trend in the future. In the current technique turbulent period the FT prediction becomes more complicated.First three methods of another approachesfrom listed in Chapter 4 seem to be forgotten.

Sun - Li (2009) have more critical attitude in terms of using MPFT, especially their interpretation. They indicate there is little attention to knowledge of experts in acquiring non-financial information. They remark that quantitative techniques of FT prediction are very important tools mainly those that are based

[15] The paper was not pioneering in the area but one of the latest because it integrates the knowledge from the area.

[16] Monitoring if the data were not influenced by "creative accounting" (fraudulent financial reporting) is included in this notion. See more e.g. Pai – Hsu – Wang (2011).

on learning models of AIES. In other words a specialist is recommended for the model choice, data selection. They should find any troubles, flaws and hidden characters of the firm using their knowledge and experience. Professionals can affirm if the gained statistics and other documents are sensitive to impending FT.

Hillegeist a kol. (2004) provide comment about using financial reports chiefly stock prices that these data reflectpast and present financial situation. A problematic issue could be going-concern assumption, i.e. the enterprise will not go bankrupt. Also ignoring volatility of assets prices makes the prediction doubtful. Consequently more frequent evaluation by auditors and other experts is advised predominantly intangible assets as well as receivables and inventories.

No model is 100 % accurate and it is not used as the EWS. Practitioners and researchers ought to testify models if they are suitable for the forecasting. New models should be more complex they are expected to take in consideration interdependence of companies and national states, public dept. In addition financial data of smaller companies are recommended being published. Moreover shareholders and top management of bankrupted businesses are advised being listed in public sites.

The author acknowledges the support of project Young scientific employees Nr. 2330262 - PERFECT (PERFORMANCE & EFFICIENCY INDICATORS)

References

1. AHN, B. A. - CHO, S. S. - KIM, C. Y. 2000. The integrated methodology of rough set theory and artificial neural network for business failure prediction, Expert Systems with Applications. 2000, roč. 18, č. 2, s. 65–74.
2. ALAM, P. a kol. 2000. The use of fuzzy clustering algorithm and self-organizing neural network for identifying potentially failing banks: An experiment study. In *Expert Systems with Applications*.ISSN 0957-4174, 2000, roč. 18, č. 3, s. 185–199.
3. ALTMAN, E. I. - HALDEMAN, R. G. - NARAYANAN, P. 1977. Zeta analysis: a new model to identify bankruptcy risk of corporations. In *Journal of Banking and Finance.* ISSN 0378-4266, 1977, roč. 1, č. 1, s. 29-54.
4. ALTMAN, E. I. - NARAYANAN, P. 1997. An International Survey of Business Failure Classification Models. In *Financial markets, Institutions& Instruments.* ISSN0963-8008, 1997, roč. 6, č. 2, s. 1-57.
5. ALTMAN, E. I. 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. In *Journal of Finance.* ISSN 0022-1082, 1968, roč. 23, č. 4, s. 589-610.
6. ALTMAN, E. I. 1977. Predicting performance in the savings and loan industry. In *Journal of Monetary Economics.*ISSN 0304-3932, 1977, roč. 4, č. 3, s. 443-466.
7. ANDRES, J. D. - LANDAJO, M. - LORCA, M. 2005. Forecasting business profitability by using classification techniques: A comparative analysis based on a Spanish case. In *European Journal of OperationalResearch.* ISSN 0377-2217, 2005, roč.167, č. 2, s. 518–542.

8. AZIZ, A. M. - DAR, H. A. 2006.Predicting Corporate Bankruptcy: where we stand?. In *Corporate Governance*. ISSN 1472-0701, 2006, roč. 6, č. 1, s. 18-33.
9. BACK, B. - LAITINEN, T. - SERE, K. 1996. Neural network and genetic algorithm for bankruptcy prediction. In *Expert Systems with Applications.* ISSN 0957-4174, 1996, roč. 11, č. 4, s. 407–413.
10. BAEK, J. - CHO, S. 2003. Bankruptcy Prediction for credit risk using auto associative neural networks in Korean firms. In *IEEE International Conference on Computational Intelligence for Financial Engineering*. ISBN 0-7803-7654-4. Hong-Kong, 2003. S. 25-29.
11. BANKS, W. J. - ABAD, P. L. 1994. On the performance of linear programming heuristics applied on a quadratic transformation in the classification problem. In *European Journal of Operational Research.* ISSN 0377-2217, 1994, roč. 74 č. 23, s. 23–28.
12. BARNIV, R. - ANURAG, A. - LEACH, R. 1997. Predicting the outcome following bankruptcy filing: A three state classification using NN. In *International Journal of Intelligent Systems in Accounting, Finance and Management*. ISSN 1099-1174, 1997, roč. 6, č. 3, s. 177–194.
13. BARNIV, R. - RAVEH, A. 1989. Identifying financial distress: A new nonparametric approach. In *Journal of Business Finance and Accounting.*ISSN 0306-686X, 1989, roč. 16, č. 3, s. 361–383.
14. BEAVER, W. H. 1966. Financial ratios as predictors of failure. In *Empirical research in accounting: Selected studies.* ISSN 0268-6902, 1966, roč. 4, Supplement, s. 71-111.
15. BELL, T. - RIBAR, G. - VERCHIO, J. 1990. Neural nets versus logistic regression: A comparison of each model's ability to predict commercial bank failures. In R.P. Srivatsava (Ed.), Proceedings of the 1990 Deloitte &Touche/University of Kansas Symposium of Auditing Problems (s. 29–58), Kansas, USA.
16. BIAN, H. - MAZLACK, L. 2003. Fuzzy-rough nearest neighbour classification approach, in: 22nd International Conference of the North American Fuzzy Information Processing Society (NAFIPS 2003) Proceedings Chicago, 2003, s. 500–505.
17. BIOCH, J. C. - POPOVA, V. 2001. Bankruptcy prediction with rough sets, ERIM Report Series Research in Management (ERS-2001-11-LIS), 2001.
18. BRYANT, S. M. 1997. A case-based reasoning approach to bankruptcy prediction modelling. In *Intelligent Systems in Accounting, Finance and Management.* ISSN 1099-1174, 1997, roč. 6, s. 195–214.
19. CANBAS, S. – CABUK, A. – KILIC, S. B. 2005. Prediction of commercial bank failure via multivariate statistical analysis of financial structures: The Turkish case. In *European Journal of Operational Research.* ISSN 0377-2217, 2005, roč. 166, č.2, s. 528–546.
20. CIELEN, A. - PEETERS, L. - VANHOOF, K. 2004. Bankruptcy prediction using a data envelopment analysis. In *European Journal of Operational Research.* ISSN 0377-2217, 2004, roč. 154, s. 526–532.
21. COLLINS, R. A. - GREEN, R. D. 1982. Statistical Methods for Bankruptcy Forecasting. In *Journal of Economics and Business.* ISSN 0148-6195, 1982, roč. 32, s. 349-354.
22. DIETRICH, J. R. - KAPLAN, R. S. 1982. Empirical analysis of the loan classification decision. In *The Accounting Review*. ISSN 0001-4826, 1982, roč. 57, č.1, s. 18–38.
23. DIMITRAS, A.I. a kol. Business failure prediction using rough sets. In *European Journal of Operational Research*. ISSN 0377-2217, 1999, roč. 114, s. 263–280.

24. EISENBIS, R. A. 1977. Pitfalls in the application of discriminant analysis in business, finance, and Economics. In *Journal of Finance*. ISSN0022-1082, roč. 32, č. 3, s. 875 – 900.
25. ELHADI, M. T. 2000. Bankruptcy support system: Taking advantage of information retrieval and case-based reasoning. In *Export Systems with Applications.* ISSN 0957-4174, 2000, roč. 18, s. 215–219.
26. ELLIOTT, J. A. - KENNEDY, D. B. 1988. Estimation and prediction of categorical models in accounting research. In *Journal of Accounting Literature.* ISSN 0737-4607, 1988, roč. 7, č. 1, s. 202–242.
27. FLETCHER, D. - GOSS, E. 1993. Application forecasting with neural networks an application using bankruptcy data. In *Information and Management.* ISSN 0378-7206,1993, roč. 24,s. 159–167.
28. FRYDMAN, H. - ALTMAN, E. I. - KAO, D. 1985. Introducing recursive partitioning for financial classification: The case of financial distress. In *Journal of Finance,* ISSN 0022-1082, 1985, roč. 40 č. 1, s. 269–291.
29. GESTEL, T.V. a kol. 2006. Bayesian kernel based classification for financial distress detection, In *European Journal of Operational Research*. ISSN 0377-2217, 2006, roč. 172 2006, s. 979–1003.
30. GORZALCZANY, M. B. - PISTA, Z. 1999. Neuro-fuzzy approach versus rough-set inspired methodology for intelligent decision support. In *Information Science,* 1999, roč. 120, s. 45–68.
31. GRECO, S. - MATARAZZO, B. - SLOWINSKI, R. 1998a. A new rough set approach to multicriteria and multiattribute classification, Rough Sets and Current Trends in Computing, Berlin 1998, s. 60–67.
32. GRECO, S. - MATARAZZO, B. - SLOWINSKI, R. 1998b. A new rough set approach to evaluation of bankruptcy risk, in: C. Zopounidis (Ed.), Operational Tools in the Management of Financial Risks, Kluwer Academic Publishers, Dordrecht, 1998, s. 121–136.
33. HÄRDLE, W. a kol. 2009. Variable Selection and Oversampling in the Use of Smooth Support Vector Machines for Predicting the Default Risk of Companies. In *Journal of Forecasting,* ISSN, 2009, roč. 28, s. 512–534.
34. HASLEM, J. A. - SCHERAGA, C. A. - BEDINGFIELD, J. P. 1992. An Analysis of the Foreign and Domestic Balance Sheet Strategies of U.S. Banks and Their Association to Profitability Performance. In *Management International Review,* ISSN 0938-8249, 1992, roč. 32, č. 1, s. 55-75.
35. HSIEH, T.-J. – HSIAO, H.-F. – YEH, W.-C. 2012. Mining financial distress trend data using penalty guided support vector machines based on hybrid of particle swarm optimization and artificial bee colony algorithm. In *Neurocomputing.* ISSN 0925-2312, 2012, roč. 82, č. 1, s. 196–206.
36. HUA, Z. – SUN, Y. – XU, X. 2011.Operational causes of bankruptcy propagation in supply chain. In *Decision Support Systems.* ISSN 0167-9236 51, 2011, roč. 51, č. 3, s. 671–681.
37. CHRASTINOVÁ, Z. 1998. Metódy hodnotenia ekonomickej bonity a predikcie finančnej situácie poľnohospodárskych podnikov, Bratislava : VÚEPP, 1998. ISBN 80-8058-212-2.
38. IGNIZIO, J. P.- SOLTYAS, J. R. 1996. Simultaneous design and training of ontogenic neural network classifier. In *Computers Operations Research.*ISSN 0305-0548, 1996, roč. 23, č. 6, s. 535–546.
39. INVESTOPEDIA. 2011. Financial distress. [Online], 2011. [cit. 2011-08-11] dostupné na <http://www.investopedia.com/terms/f/financial_distress.asp#axzz1d2qTfm8W. >

40. INVESTORWORDS. 2010. Financial health. [Online], 2010. [cit. 2010-01-10] dostupné na http://www.investorwords.com/6812/financial_health.html
41. JENG, B. - JENG, Y.-M. - LIANG, T.-P. 1997. FILM: A fuzzy learning method for automated knowledge acquisition. In *Decision Support Systems*. ISSN 0167-9236, 1997, roč. 21, s. 61–73.
42. JO, H. - HAN, I. - LEE, H. 1997. Bankruptcy prediction using case based reasoning, neural network and discriminant analysis for bankruptcy prediction. In *Expert Systems with Applications*. ISSN 0957-4174, 1997, roč. 13, č. 2, s. 97–108.
43. JO, H. - HAN, I. 1997. Integration of case-based forecasting, neural network and discriminant analysis for bankruptcy predict prediction. In *Expert Systems with Applications.*ISSN 0957-4174, 1996, roč. 11, č. 4, s. 415–422.
44. JONES, S. - HENSHER, D. A. 2004. Predicting firm financial distress: A mixed logit model. In *Accounting Review.*ISSN 0001-4826, 2004, roč. 79, č. 4, s. 1011–1038.
45. KASKI, S. - SINKKONEN, J. - PELTONEN, J. 2001. Bankruptcy analysis with self-organizing maps in learning metrics. In *IEEE Transactions on Neural Networks.* ISSN 1045-9227, 2001, roč. 12, č. 4, s.936-947.
46. KENNEDY, D. B. 1992. Classification techniques in accounting research: Empirical evidence of comparative performance. In *Contemporary Accounting Research.* ISSN 1911-3846, 1992, roč. 8, č. 2, s. 419–422.
47. KIVILUOTO, K. 1998. Predicting bankruptcies with self organizing map. In *Neurocomputing.* ISSN 0925-2312, 1998, roč. 21, č.1, s. 191–201.
48. KOLARI, J. a kol. 2002. Predicting large US commercial bank failures. In *Journal of Economics and Business*. ISSN 0148-6195, 2002, roč. 54, č. 4, s. 361–387.
49. KOTULIČ, R. - KIRÁLY, P. - RAJČÁNIOVÁ, M. 2010. Finančná analýza podniku. 2. preprac. a dopl. vyd. Bratislava : IURA EDITION, 2010. 238 s. Ekonómia. ISBN 978-80-8078-342-6.
50. KRALICEK, P. 1993. Základy finančního hospodaření : Bilance. Účet zisků a ztrát. Cash-flow. Základy kalkulace. Finanční plánování. Systémy včasného varování. 1. vyd. Praha : Linde, 1993. 110 s. ISBN 80-85647-11-7.
51. KRAVEC, M. 2011. Analýza klastrov v hutníckom priemysle: diplomová práca. Košice : Ekonomická univerzita v Bratislave. Podnikovohospodárska fakulta. 105 s. – vedúci Dr. h. c. prof. RNDr. Michal Tkáč, CSc.
52. KUMAR, P. R. - RAVI, V. 2007. Bankruptcy prediction in banks and firms via statistical and intelligent techniques – A review. In *European Journal of Operation Research*. ISSN 0377-2217, 2007, roč. 180, č. 1, s. 1-28.
53. LACHER, R.C. a kol. 1995. A Neural network for classifying the financial health of a firm. In *European Journal of Operational Research.* ISSN 0377-2217, 1995, roč.85, č. 1, s. 53–65.
54. LAM, M. 2004. Neural networks techniques for financial performance prediction: integrating fundamental and technical analysis. In *Decision Support Systems*. ISSN 0167-9236, 2004, roč. 37, s. 567–581.
55. LANE, W. – LOONEY, S. –WANSLEY, J. 1986. An application of the cox proportional hazards model to bank failure. In *Journal of Banking and Finance.* ISSN 0378-4266, 1986, roč.10, s. 511–531.
56. LEE, K. - BOOTH, D. - ALAM, D. 2005. A comparison of supervised and unsupervised neural networks in predicting bankruptcy of Korean firms. In *Expert Systems with Applications.*ISSN 0957-4174, 2005, roč. 29, č. 1, s. 1–16.
57. LEE, K. C. - HAN, I. - KWON, Y. 1996. Hybrid neural network models for bankruptcy predictions. In *Decision Support Systems*. ISSN 0167-9236, 1996, roč. 18, č.1, s. 63–72.

58. LESHNO, M. - SPECTOR, Y. 1996. Neural network prediction analysis: The bankruptcy case. In *Neurocomputing*. ISSN 0925-2312, 1996, roč. 10, s. 125–147.
59. LI, H. – SUN, J. 2012. Forecasting business failure: The use of nearest-neighbour support vectors and correcting imbalanced samples e Evidence from the Chinese hotel industry In *Tourism Management.*ISSN 0261-5177, 2012, roč. 33, č. 3 s. 622-634.
60. LI, H. a kol. 2011. The random subspace binary logit (RSBL) model for bankruptcy prediction. In *Knowledge-Based Systems*. ISSN 0950-7051, 2011, roč. 24, č. 8,s. 1380–1388.
61. LIN, F.Y. - MCCLEAN, S. 2001. A data mining approach to the prediction of corporate failure. In *Knowledge Based Systems,* 2001, roč. 14, s. 189–195.
62. LINDSAY, D. – CAMPBELL, A. A chaos approach to bankruptcy prediction. In *Journal of Applied Business Research.*ISSN 0892-7626, 1996, roč. 12, č. 4, s.1–9.
63. MAR MOLINERO, C. - EZZAMEL, M. 1991. Multidimensional scaling applied to corporate failure, In *Omega,* ISSN: 0305-0483,1991, roč. 19, č. 4, s. 259-274.
64. MARAIS, M. L. - PATEL, J. - WOLFSON, M. 1984. The experimental design of classification models: An application of recursive partitioning and bootstrapping to commercial bank loan classifications. In *Journal of Accounting Research*. ISSN 1475-679X, 1984, roč. 22, s. 87–113.
65. MARE, D. S. 2012. Contribution of macroeconomic factors to the prediction of small bank failures. [Online]. 2012. cit. 2012-25-07]. dostupné na http://ssrn.com/abstract=2050029.
66. MARTIN a kol. 2011. A hybrid model for bankruptcy Prediction using genetic Algorithm, fuzzy c-means and mars. In *International Journal on Soft Computing*. ISSN 1432-7643, 2011, roč. 2, č.1, s. 14-21.
67. MARTIN, A. – MANJULA, M. – VENKATESAN, P. 2011. Business Intelligence Model to Predict Bankruptcy using Financial Domain Ontology with Association Rule Mining Algorithm. In *IJCSI International Journal of Computer Science Issues.* ISSN 1694-0814, 2011, roč. 8, č. 3, s. 211-208.
68. MARTIN a kol. 2012. An Analysis on Qualitative Bankruptcy Prediction Using Fuzzy ID3 and Ant Colony Optimization Algorithm [Online]. 2012. cit. 2012-25-06]. dostupné na http://ieeexplore.ieee.org/xpl/articleDetails.jsp?reload=true&arnumber=6208382&contentType=Conference+Publications
69. MARTIN, A. – LAKSHMI, T. M. – VENKATESAN, P. 2012.An Analysis on Business Intelligence Models to Improve Business Performance. In IEEE- International Conference On Advances In Engineering, Science And Management (ICAESM -2012) March 30, 31, 2012. ISBN 978-81-909042-2-3.
70. MARTIN, D. 1977. Early Warning of Bank Failure: A Logit Regression Approach. In *Journal of Banking and Finance.* ISSN 0378-4266, 1977, roč. 1, č. 1, s. 249-76.
71. MCKEE, T. E. - LENSBERG, T. 2002. Genetic programming and rough sets: A hybrid approach to bankruptcy classification. In *European Journal of Operational Research,* ISSN 0377-2217,2002,roč.138, s. 436–451.
72. MCKEE, T. E. 2000. Developing a bankruptcy prediction model via rough sets theory. In *International Journal of Intelligent Systems in Accounting, Finance and Management.*ISSN 1099-1174, 2000, roč. 9, s.59–173.
73. MCKEE, T. E. 2003. Rough sets bankruptcy prediction models versus auditor signalling rates. In *Journal of Forecasting.*ISSN 1099-131X, 2003, roč. 22, s. 569–589.
74. MESSIER, W. F. - HANSEN, J. 1988. Inducing rules for expert system development: An example using default and bankruptcy data. In *Management Science*. ISSN 0025-1909, 1988, roč. 12, s. 1403–1415.

75. MEYER, P. A. - PIFER, H. W. 1970. Prediction of bank failures. In *Journal of Finance*. ISSN 0022-1082, 1970, roč. 25, č. 4, s. 853–868.
76. MICHAEL, S. a kol. 1999. A fuzzy knowledge-based decision aiding method for the assessment of financial risk: The case of corporate bankruptcy prediction, in: European Symposium on Intelligent Techniques, Crete, Greece, 1999.
77. MIN, J. H. - LEE, Y.-C. Bankruptcy prediction using support vector machine (SVM) with optimal choice of kernel function parameters. In *Expert Systems with Applications*. ISSN 0957-4174, 2005, roč. 28, s. 603–614
78. NANDA, S. - PENDHARKAR, P. 2001. Linear models for minimizing misclassification costs in bankruptcy prediction. In *International Journal of Intelligent Systems in Accounting, Finance and Management.* ISSN 1099-1174, 2001, roč. 10 s. 155–168.
79. NENIDE, B. – PRICER, R. W. – CAMP, S. M. 2010. The use of Financial Ratios for Research: Problems Associated with and Recommendations for Using Large Databases [Online]. 2010. [cit. 2012-25-06]. dostupné na http://www.fintel.us/download/Problems%20with%20and%20Recommendations%20for%20Large%20Databases.pdf
80. NEUMAIER, I. - NEUMAIEROVÁ, I. 2005. Index IN 05. Brno 21. - 23. 6. 2004. In: Sborník příspěvků mezinárodní vědecké konference „Evropské finanční systémy". Brno: Ekonomicko-správní fakulta Masarykovy university v Brně, 2005, s. 143-148. ISBN 80-210-3753-9.
81. ODOM, M. - SHARDA, R. 1990. A neural network for bankruptcy prediction, in: IJCNN International Conference on Neural Networks, San Diego, CA, 1990.
82. OHLSON, J. A. 1980. Financial ratios and the probabilistic prediction of bankruptcy. In *Journal of Accounting Research.* ISSN 1475-679X,1980, roč. 18, č. 1, s. 109–131.
83. OLMEDA, I. - FERNANDEZ, E. 1997. Hybrid classifiers for financial multicriteria decision making: The case of bankruptcy prediction. In *Computational Economics.* ISSN 0927-7099, 1997, roč. 10, s. 317–335.
84. PAI, P.-F. – HSU, M. –F. – WANG, M. – C. A support vector machine-based model for detecting top management fraud. In *Knowledge-Based Systems.* ISSN 0950-7051, roč. 24, č. 2, s. 314–321.
85. PARK, C.-S. - HAN, I. 2002. A case-based reasoning with the feature weights derived by analytic hierarchy process for bank bankruptcy prediction, Expert Systems with Applications.ISSN 0957-4174, 2002, roč. 23 č. 3, s. 255–264.
86. PIRAMUTHU, S. - RAGAVAN, H. – SHAW, M. J. 1998. Using feature construction to improve the performance of the neural networks. In *Management Science.* ISSN 0025-1909, 1998, roč. 44, č. 3, s. 416-430.
87. QUINLAN, J. R. 1993. *C4.5Programs for Machine Learning*. Morgan Kaufman, CA. 302 s. ISBN 13978-1558602380.
88. RAFNSSON, A. M. 2009. Ignoring operating warning signals - Analysis on the financial health development of several largest companies in Iceland from 2003 to 2008 [Online], 2009. [cit. 2010-01-10] Dostupné na internete: http://pure.au.dk/portal-asb-student/files/7692/Rafnsson_2009.pdf
89. RAHIMIAN, E. a kol. 1996.Bankruptcy prediction by neural network, in: R.R. Trippi, E. Turban (Eds.), Neural Networks in Finance and Investing, Irwin Professional Publishing, Burr Ridge, USA, 1996.
90. RYU, Y.U.- YUE, W.T.Firm bankruptcy prediction: Experimental comparison of isotonic separation and other classification approaches. In *IEEE Transactions On Systems, Management and Cybernetics-Part A: Systems and Humans,*ISSN 1083-4427, 2005, roč. 35, č. 5, s. 727–737.

91. SERRANO-CINCA, C. 1996. Self-organizing neural networks for financial diagnosis. In *Decision Support Systems.* ISSN 0167-9236, 1996, roč. 17, č. 3, s. 227–238.
92. SHIN, K.-S. LEE, Y.-J. 2002. A genetic algorithm application in bankruptcy prediction modelling, In *Expert Systems with Applications.* ISSN 0957-4174,2002, roč. 23, č.3, s. 321–328.
93. SPECHT, D. F. 1990. Probabilistic neural networks. In *Neural Networks*. ISSN 0893-6080, 1990, roč. 3, s. 110–118.
94. SUN, J. – LI, H. 2009. Financial distress early warning based on group decision making. In: *Computers & Operations Research,* ISSN 0305-0548, 2009, roč. 36, s. 885 – 906.
95. TAM, K. Y. 1991. Neural network models and the prediction of bank bankruptcy. In *Omega.* ISSN 0305-0483, 1991, roč. 19, č. 5, s. 429–445.
96. TAMARI, M. 1966. Financial ratios as a means of forecasting bankruptcy. In *Management International Review*. ISSN 0938-8249, 1966, roč. 6, č. 4, s. 15–21.
97. TUNG, W. L. - QUEK, C. - CHENG, P. 2004. GenSo-EWS: A novel neural-fuzzy based early warning system for predicting bank failures. In *Neural Networks.*ISSN 0893-6080, 2004, roč. 17, č. 4, s. 567–587.
98. VARETTO, F. 1998. Genetic algorithm applications in the analysis of insolvency risk. In *Journal of Banking and Finance.* ISSN 0378-4266, 1998, roč. 22, s. 1421–1439.
99. VARCHOLOVÁ, T. – DUBOVICKÁ, L. – KRAVEC, M. 2012. K preferenciám bankrotových modelov. In Ekonomické rozhľady. ISSN0323-262X, 2012.Forthcoming.
100. WALLRAFEN, J. - PROTZEL, P. - POPP, H. 1996. Genetically optimized neural network classifiers for bankruptcy prediction, in: Proceedings of the 29 the Annual Hawaii International Conference on System Sciences, 1996.
101. WEST, R. C. 1985. A factor analytic approach to bank condition. In *Journal of Banking and Finance.* 1985, roč. 9, č. 2, s. 253–266.
102. YANG, Z. R. – PLATT, M. B. - PLATT, H. D. 1999. Probability neural network in bankruptcy prediction. In *Journal of Business Research.*ISSN 0148-2963, 1999, roč. 44, s. 67–74.
103. YIP, A.Y.N. 2004. Predicting business failure with a case-based reasoning approach, lecture notes in computer science, in: M.G. Negoita, R. J. Howlett, L. C. Jain (Eds.), Knowledge- Based Intelligent Information and Engineering Systems: 8th International Conference, KES 2004, Wellington, New Zealand, September 3215/2004, Proceedings, Part III,2004, pp. 20–25.
104. ZALAI, K. a kol. 2010. *Finančno-ekonomická analýza podniku.* 7. Prepracované a rozšírené vydanie. Bratislava: Sprint dva, 2010. ISBN 978-80-89393-15-2.
105. ZHANG, G. a kol. 1999. Artificial neural networks and bankruptcy prediction general framework and cross-validated analysis. In *European Journal of Operational Research*. ISSN 0377-2217, 1999, roč. 116, s. 16–32.
106. ZMIJEWSKI, M. E. 1984. Methodological issues related to the estimation of financial distress prediction models. In *Studies on Current Econometric Issues in Accounting Research.* ISSN 1790-0832, 1984, roč. 22, č.1, s. 39–82.

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THE POLISH INSURANCE MARKET IN THE YEARS 2004 – 2011

POĽSKÝ POISTNÝ TRH V OBDOBÍ 2004 – 2011

Ryszard PUKALA

Abstract
Insurance is an important factor in the development of every country as well as the stability of human life from the microeconomic as well as macroeconomic point of view. The insurance sector is one of the key segments of the financial market, within which strict cooperation of all its parts stimulates economic growth and influences society life. This article presents the position of the insurance sector as a part of the financial market as well as the state of development of the Polish insurance market from the date of the accession to the European Community to 2011. Some selected indicators showing the state of the insurance market development have been presented: the share of insurance in GDP, per capita premium, gross premium, life and non-life structure of insurance, claims, technical reserves, concentration of the insurance market, Herfindahl - Hirschman Index. I have also presented institutions creating the insurance market in Poland as well as well as processes occurring on this market.

Keywords: insurance market, premium written, technical reserves, investment activity, subject of insurance market

Abstrakt
Poistenie je dôležitým faktorom v rozvoji každej krajiny, rovnako ako stabilita ľudského života z mikroekonomického či makroekonomického pohľadu. Poisťovníctvo je jedným z kľúčových segmentov finančného trhu. V rámci spolupráce všetkých jeho častí tak dochádza k stimulácií ekonomického rastu a zároveň ovplyvňuje život spoločnosti. Tento článok predstavuje pozíciu poisťovacieho sektora ako súčasť finančného trhu, rovnako ako vývoj poľského trhu odo dňa vstupu do EU až do roku 2011. Niektoré vybrané ukazovatele zobrazujú stav vývoja poistného trhu: podiel poistenia na HDP na obyvateľa, hrubé poistné, životné a neživotné poistenie, technické rezervy, koncentrácia poistného trhu, Herfindahlov - Hirschmanov Index. Tiež som predstavil inštitúcie, ktoré tvoria poistný trh v Poľsku, rovnako ako aj procesy prebiehajúce na tomto trhu.

Kľúčové slová: poistný trh, poistné, technické rezervy, investičná činnosť

Introduction

The insurance sector is a very important segment of the financial system in commercial economy fulfilling, first of all, the functions: delivering tools securing businesses as well as individuals against any kinds of risk, accumulation and allocation of capital as well as collecting and processing information. This sector fulfills a very important role in any country's economy and stability of people's life. It constitutes material security against results of

unfavorable random incidents. The risk of occurring such incidents always accompanies people's life, and an action within risk is a characteristic of any economy. The problem of developing insurance is, therefore, an important topic, particularly during the increase of common dependence between economies of different countries as well as more and more differentiated conditions of functioning of the international financial system. This must be stressed that in a majority of developed countries and emerging ones insurance institutions take the second place, after banks, in the financial sector according to the size of their assets. The intensity of globalization phenomena as well as consolidation ones and the end of 20th and beginning of 21 centuries caused insurance companies became one of the main factors which influence on creating financial conglomerates, the latter ones have an influence on the whole financial market. The same processes can be noticed in Poland as well, where the position of the insurance sector is very important for the country's economy. Modern, functioning effectively insurance sector is, therefore, indispensable to achieve a stable economic development. Furthermore, insurance enlarge the financial stability of economy, contribute to an increase of economic development as well as they stimulate saving and investment.

1. The insurance market as a component of the financial market

This is worth defining the financial market, whose part is insurance market. Generally speaking, the financial market is a place where money is used for performing transactions. The subject of the financial market are securities and money occurring in a material or immaterial form. If we accept W. Nawrot's definition "The financial market includes all connections between its participants within accumulating and dividing money"[1]. As a result, we can remark that on the financial market transactions of selling- buying of various forms of capital are contracted, short-term as well as long-term ones. The financial market, thanks to its qualities, enables owners of capital surplus to invest it, and businesses and individuals, which lack capital, to achieve them by transactions on the market. Moreover, the financial market functioning enables investors to differentiate their portfolio of assets and allows them to limit risk connected with investment. This is accepted that the main functions of the financial market are:

- Capital mobility which is a transformation of savings to investment. The market encourages investment offering an attractive profit as a reward for taking a risk connected with investing and putting consumption aside. The financial market is not only a market of bank deposits but also a possibility to invest in various financial instruments.

[1] W. Nawrot, Exchange - Traded Funds (ETF). Nowe produkty na rynku funduszy inwestycyjnych. CeDeWu Sp. z o.o., Warszawa 2007, p.9.

- Capital allocation which is the identification of financial needs on the market and directing financial means there. In other words, it directs financial means to subjects needing them to develop these economy sectors which ensure the most effective use of funds.
- The assessment of capital and risk. Each capital investment is connected with a risk. This risk is connected with an uncertainty of investment effects. This assessment of investment effects and a definition of a risk accompanying investment goes through the market which offers different investment opportunities.

When we make a presentation of a financial market, through the systemic ties of individual operations and their concrete forms in insurance, we can use the presentation by Eva Kafkova, who described these dependencies in a graphic form, Figure 1. According to her opinion participants of a financial market "realize these operations through integral insurance activities – the investment of provision monetary resources"[2]

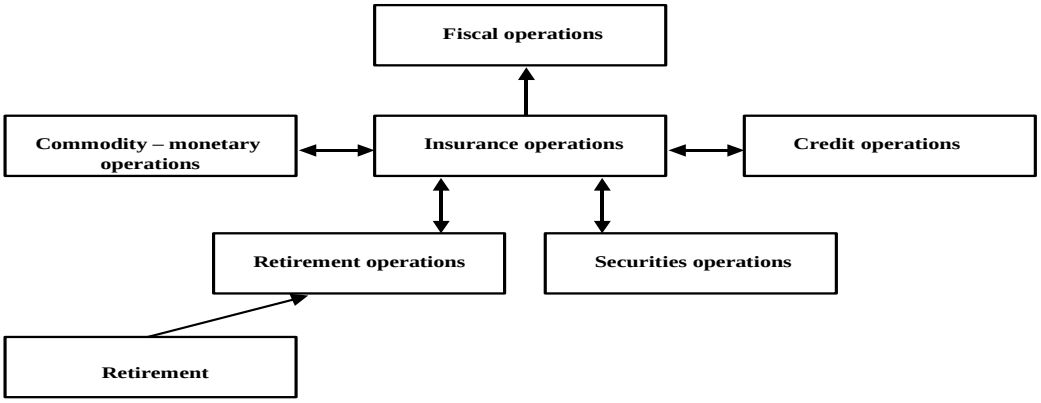


Figure 1
Systemic ties of monetary operation
Source: E. Kafkova, Development of insurance market in Slovak Republic the period 2004 – 2010, Acta Oeconomica Cassoviensia, University of Economics in Bratislava, Faculty of Business Economics with a seat in Kosice, Kosice, 2011, p.89.

This must be stressed that the financial system is created by a group of seven separate economy sectors which are:

- NFC - non-financial corporations,
- MFI - monetary financial institutions,

[2] E. Kafkova, Development of insurance market in Slovak Republic the period 2004 – 2010, Acta Oeconomica Cassoviensia, University of Economics in Bratislava, Faculty of Business Economics with a seat in Kosice, Kosice, 2011, p.89.

- OFI - other financial institutions,
- INS - insurance corporation and pension funds,
- GOV - general government,
- HH - households,
- ROW - rest of the world.

Strict cooperation and mutual stimulation of all the seven sectors increases economy effectiveness expressed by the growth of GDP as well its influence on international financial markets.

The Polish financial system structure is typical for the continental model, in which banking is the dominating form – look at Figure 2 below.

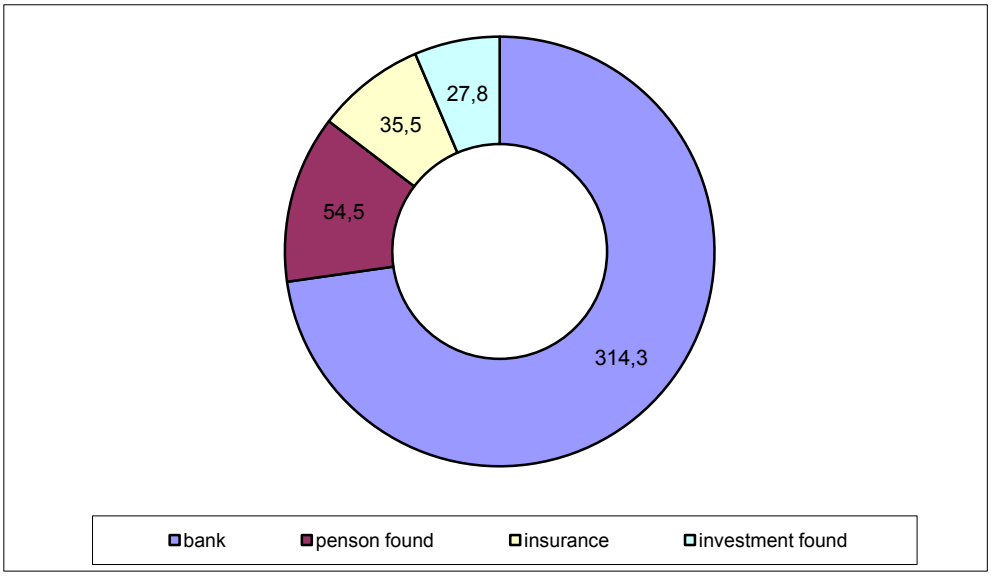


Figure 2
Assets of main sectors of the financial market in Poland on 31 December 2011 (billion EUR)
Source: Own figure on basis "Raport o funkcjonowaniu polskiego rynku finansowego w ujeciu miedzysektorowym", Urząd Komisji Nadzory Finansowego, Warszawa, 2011.

The share of the banking sector in the joint sum of financial assets was 72,8% and the one of the insurance sector only 8,2% on 31 December 2011. This is worth mentioning that the bank sector in Poland is characterized by a large development potential expressed by a dynamic increase in mortgages, a large number of active loan institutions, a high level of asset concentration and a considerable foreign investment. At the background the insurance sector is relatively small although this must be noted that it belongs to the most prospective sectors of the Polish economy. Despite considerable disproportions the two sectors complement each other, for instance by bancassurance, which enlarges their position on the market as well as it allows them to use their potential better.

2. The development of the Polish insurance institutions

The process of the Polish insurance building adapted to the European Union standards started from passing the act of 28 July 1990, The act about insurance activity, which introduced the first generation of EU directives to the Polish law. An important element was the arising of the bank and capital market as well as the shaping of free competition principles. The insurance activity in Poland, excluding the provisions of the Civil Code, was ultimately regulated on 22 May 2003 by four basic acts about:

- Insurance activity,
- Insurance intermediary,
- Compulsory insurance, Insurance Guarantee Fund and Polish Motor Insurers' Bureau,
- Insurance and pension sector supervision as well as Polish Insurance Ombudsman.

Subsequent years have brought further changes whose main aims was the integration of the Polish insurance market with the unified insurance market of the EU.

Assessing the level of the Polish insurance market during the last 20 years, this must be stressed that on the supply side as well as on the demand one important changes have occurred. They have been caused by institutional and economic factors. The insurance sector went through a deep transformation in the subject- structural scope as well as quantity one. The changes have concerned almost all aspects of its functioning. The changes have occurred under the influence of internal processes concerning social and economic changes as well as external ones such as: globalization, deregulation and liberalization. Because of this competition conditions on the insurance market in Poland have improved considerably. The market has been becoming more and more effective. Significant structural changes have taken place on the demand side. Undoubtedly, it proves that insurance awareness has been growing and the role of the insurance sector role has been growing in savings accumulation. Households do not limit insurance consumption exclusively to basic services, which are instruments securing against the risk of random incidents but they use insurance products as a form of financial deposits as well as additional pension. This must be stressed that households in Poland are interested more and more, at present, in financial services which are treated in economy as luxury goods to which belong, among others life insurance policies with capital funds as well as other insurance products having the character of saving- investment ones.

The insurance market, apart from protection of clients, insurance companies and auxiliary institutions (for instance insurance agents, expert bureaus and others) also create institutions of the infrastructure insurance market. They include, in particular, the insurance supervision, auxiliary institutions for clients

or complementing the activity of insurance companies, that is: Polish Insurance Ombudsman, . Insurance Guarantee Fund, Polish Motor Insurers' Bureau and Polish Insurance Association.

2.1 Polish Financial Supervision Authority

Polish Financial Supervision Authority[3] (PFSA) is the central institution of the state administration supervising the financial market in Poland. It was formed, according to Act of 21 July 2006 about financial market supervision[4]. Prime Minister supervises the institution while PFSA supervises:

- the banking sector,
- the capital market,
- the insurance market
- the pension market,
- payment institutions and payment services bureaus,
- electronic money institutions.

Furthermore, PFSA activities include:

- taking actions serving the right functioning of the financial market,
- taking actions with the aim of financial market development as well as its competitiveness,
- taking informative actions in the scope of financial market functioning,
- participating in the creation of legal acts concerning financial market supervision,
- creating possibilities of an amicable settlement of a dispute between participants of the financial market,
- taking other actions within the act.

The aim of financial market supervision is ensuring the right functioning of this market, its stability, safety, transparency, trust to the financial market as well as ensuring the protection of this market participants.

2.2 Polish Insurance Association

Polish Insurance Association[5] (PIA) is an organization of economic self-government acting on the base of Act about insurance activity of 28 July 1990. At the beginning of its activity it was a voluntary association of insurance companies, transformed in 1995 into an organization of insurance self-

[3] www.knf.gov.pl
[4] Ustawa z dnia 21 lipca 2006 o nadzorze nad rynkiem finansowym (Dz. U. z 2006 r. Nr 157, poz. 1119),
[5] www.piu.org.pl

government, in which participation is obligatory and begins with the moment of beginning insurance activity in Poland. Since 2000 a broadening of PIA has broadened at the national and international level. The participation in its actions of the insurance environment has been broadened. Information and publication activities have been developed within insurance. A system of insurance employees' training has been implemented. At the international level a strengthening of the Polish insurance environment and important links have been established with European organizations and associations.

The aims of PIA are as follows:

- building a strong insurance self-government,
- supporting building of a rational legal system regulating insurance services in Poland,
- activity within the frames of international structure of insurance self-governments,
- information exchange and the integration of the insurance environment
- cooperation with the PFSA and insurance institutions,
- education about insurance,
- building prestige and trust in insurance in Poland.

PIA plays, therefore, a particular role in organizing the insurance market. It represents the interests of insurance institutions confronting the public authority and other national and international organizations. Furthermore, it takes activities in the scope of protecting association members' interests, preventing threats to the safety of the insurance market, taking care of honest competition principles, and ethical principles on the insurance market.

2.3 Polish Motor Insurers' Bureau

Polish Motor Insurers' Bureau[6] (PMIB) is an organization which comprises insurance companies offering obligatory insurance against civil liability of holders of motor vehicles. According to the Act about compulsory insurance, Insurance Guarantee Fund and Polish Motor Insurers' Bureau, insurance companies which offer this insurance are obliged to belong to the Bureau on the day of achieving a permission from the insurance supervision. PMIB deals, among others, with:

- issuing insurance documents (Green Cards) valid in the countries of the Green Card system,
- drafting agreements with National Bureaus from this card system,

[6] www.pbuk.com.pl

- organizing damage liquidation caused on the Polish territory by vehicle holders registered abroad, holding a document of Green Card,
- organizing damage liquidation caused on the Polish territory by vehicle holders registered in the countries whose National Bureaus have signed multilateral agreements (that is in countries EOG, Andorra, Croatia, Switzerland and Serbia),
- defining principles and procedures of insurance border document distribution.

Moreover, PMIB functions as:

- claims bureau,
- information centre,
- information redistribution centre about accidents with casualties.

According to the principles of Green Card System, PMIB functions as the National Bureau representing Poland in the system being a member of the bureau council. Complying with the requirement stated by Recommendation No 5 on Insurance of Motorist Against Third Party Risks - 25.01.1949; 1984, 2000, 2004. PMIB is an organization, accepted by the Polish government, has signed and still signs relevant agreements with their counterparts from other countries belonging to the Green Card system.

2.4 Polish Insurance Ombudsman

Polish Insurance Ombudsman is a Polish national institution which started its activity in 1995 in connection with the bankruptcy of some insurance companies. Its aim is to represent interests of the insured, beneficiaries or authorized according an insurance agreement, members of pension funds and participants of worker pension plans. The Ombudsman's tasks include:

- dealing with claims in individual cases directed to Ombudsman,
- giving opinions about legal acts concerning the organization and functioning of insurance, pension funds and worker pension plans,
- turning to relevant institutions with suggestions of issuing new legal acts or changing the existing ones,
- informing PFSA and PIA as well as economic organizations of pension funds about visible faults in the actions of insurance companies, pension funds, worker pension plans and other institutions of the insurance market,
- creating possibilities of amicable and conciliatory settlement,

- initiating and organizing education and information activities in the scope of insurance protection for the insured, beneficiaries and members of pension funds as well as participants of worker pension plans.

Ombudsman, within their tasks, cooperates with national and foreign consumer organizations and his her functioning underlines the importance of problems of consumer interest protection in insurance.

2.5 Insurance Guarantee Fund

Insurance Guarantee Fund was created in 1990. Its task includes claim payments under the title of compulsory insurance against civil liability of holders of motor vehicles and compulsory insurance of farmer having farms in the situation when an offender is not insured or has not been identified. The fund pays claims to entitled people in the case of declaring bankruptcy of insurance companies and in the case if the assets of the debtor is not sufficient to pay claims. The fund pays 100% claims of amount due in compulsory against civil liability and in life insurance 50% of amount due, not more than 30 thousand EUR.

The fund is also an institution entitled to supervising of possessing compulsory insurance against civil liability of holders of motor vehicles and compulsory insurance against civil liability of farmers. Moreover, the fund performs tasks resulting from the Fourth Motor Directive of EU connected with creating and functioning of an information centre as well as granting financial aid in the form of aloan payable to an insurance company which takes compulsory insurance against civil liability of holders of motor vehicles and compulsory insurance against civil liability of farmers.

3. The development state of the Polish insurance market

In the last decade a dynamic growth in the insurance market has occurred in the number of insurance companies (mainly by entering the market of EU companies performing their action on the Polish territory within the framework of notification), as well as in the range of offered products and the gross premium. The number of insurance companies working in Poland from 2004 to 2011 possessing the Polish government's permission is presented on the Table 1.

Table 1

The number of insurance companies possessing the Polish government's permission from 2004 to 2011.

Insurance company	2004	2005	2006	2007	2008	2009	2010	2011
life	34	33	32	33	31	31	30	29
non - life	37	36	35	35	35	34	33	33
Total	71	69	67	68	66	65	63	62

Source: Own table on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

As this can be seen the number of companies working on the market is relatively stable. Undoubtedly this shows a certain market saturation. This is influenced by the fact that on the Polish insurance market, which is a part of the unified insurance market of EU, other insurance companies can work within a unified licence. This situation causes about 500 insurance companies from UE have expressed their readiness to act in Poland at the end of 2011.

Analyzing the insurance market from the point of view of collected premiums we must stress the fact that their dynamic increase occurred from 2004 to 2011. During the first years of the economic transformation non-life insurance was more popular, which is characteristic for emerging markets. From 2006 Polish insurance companies have been collecting more premiums from life insurance than in previous years, which in accordance with the tendencies on the EU markets. The data are shown on Diagram 1.

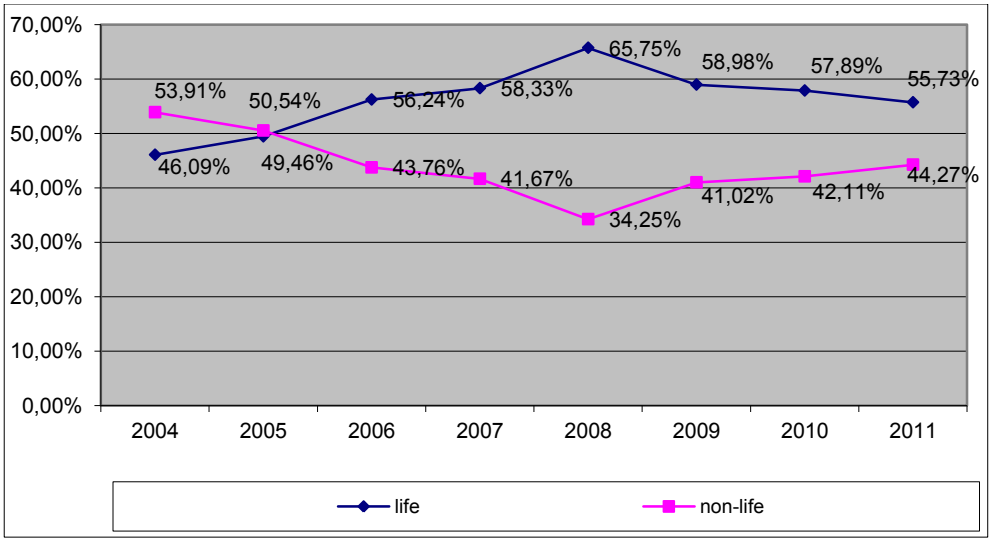


Figure 3

Structure of insurance market in Poland divided into life and non-life insurance from 2004 to 2011 (%)

Source: Own calculation on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

This must be stressed that this dynamic increase in life insurance is not only an increased interest of clients in the insurance but also the legal construction of life insurance, which in Poland is very broad and comprises agreements of different characters and different economic functions. During the last five years investment or saving products have been playing a particular role. As a rule, they are offered by insurance companies in cooperation with companies from other sectors of the financial market. The economic content of these agreements is similar to typical instruments of the capital market, for instance mutual fund units or of the bank sector, for instance bank deposits. The protective function is here limited and consequently the exposure of insurance companies to the insurance risk does not play an important role. At the same time their construction causes investment risk connected with assets purchased by insurance companies and the selection of assets .to be on the side of the insured.

After the premium growth acquired from the market, a per capita premium also grows, Diagram 2.

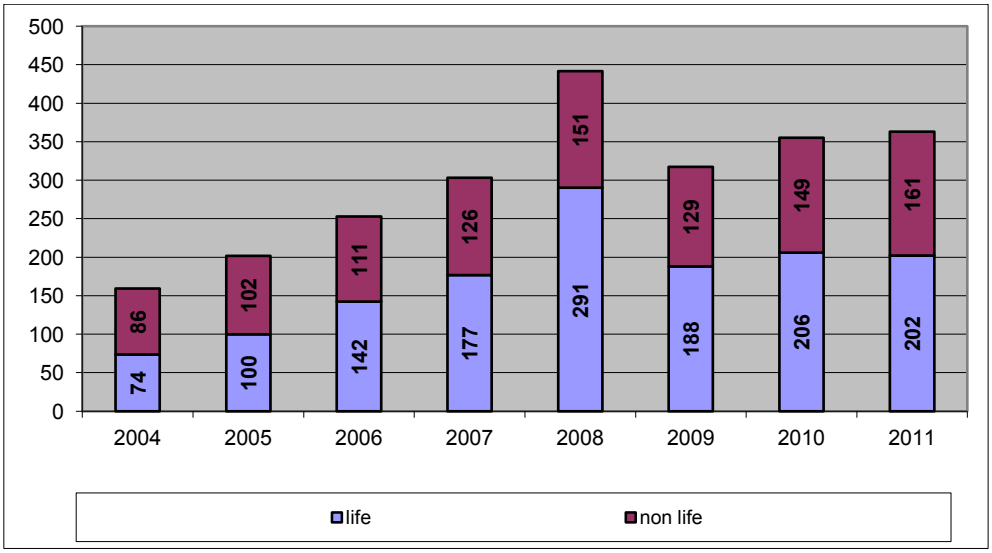


Figure 4
Per capita premium in Polish life and non-life insurance from 2004 to 2011 (in EUR)
Source: Own calculation on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011 and Report "Polish insurance market 2004 – 2010", Central Statistical Office, Warszawa, 2011.

The per capita premium increased 2,3 times from EUR 160 to EUR 363, while the highest level of EUR 442 was observed in 2008, just before the world financial crisis. The growth in the interest in insurance among Poles, particularly the life one should be considered from the point of view of the economic situation improvement in Poland. The increase in pays and the fall of unemployment observed from 2004 to 2011 caused an increase in income in

households. This increase caused larger savings, which caused an increase of demand for insurance products.

3.1 Insurance share in the country's economy

The gross premium is one of the main factors of insurance market development. The role and significance of insurance in a country economy is defined by the relation of the premium to GDP. Analyzing the significance of insurance for the economy we can use the market penetration index of the market, which defines the percentage share of the premium in GDP of a country. The data showing this share in Poland from 2004 to 2011 are presented in Diagram 3.

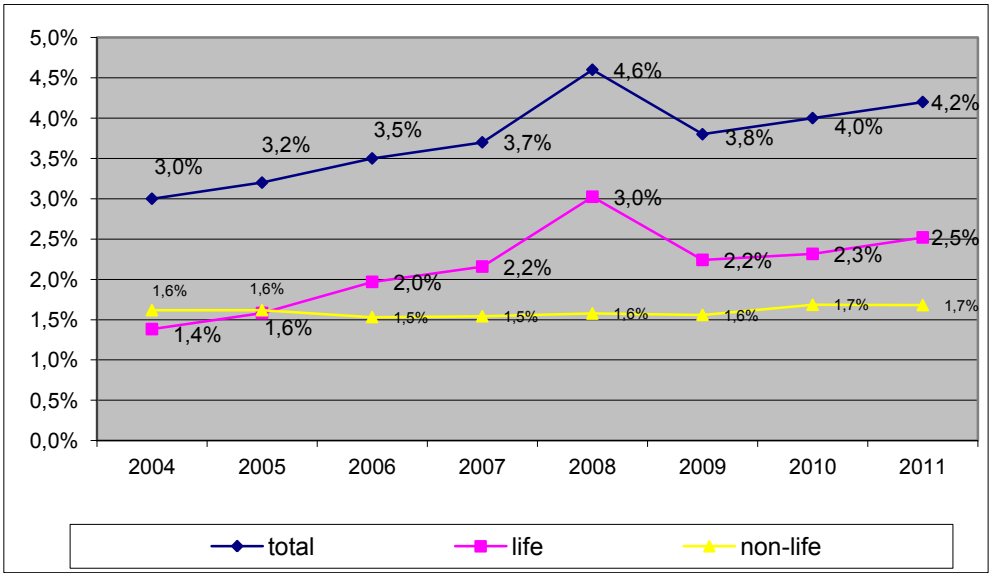


Figure 5
Share of insurance in Polish GDP divided into life and non-life insurance from 2004 to 2011 (%)
Source: Own calculation on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

The increase in insurance premium in the Polish GDP is a derivative of a higher pace of development of the insurance sector in relation to GDP growth. Higher expenses of Polish citizens on insurance, which complement the public social system also contribute to the premium growth on the market.

3.2 The concentration indicator

Concentration tendencies on the market influence on numerous processing occurring there. They strengthen the position of large insurance groups or

specialized insurance companies at the expense of companies which do not possess enough capital and unstable market position. Analyzing market we can use the concentration indicator *CRm*, which means the share of the largest insurance companies on a given market. This indicator[7] calculated according to the formula presented below shows, first of all, the domination of the largest market participants. However, it does show changes on lower levels of the company size.

$$CR_m = \frac{100}{Q} \sum_{i=1}^{m} q_i$$

Where:

q_i is a value of production,
Q is the value of production of branch.

The interpretation of this formula is the following:

a). Concentration branch if the biggest enterprises have more than 50% of production of branches,
b). Weak – Concentration branch if the biggest enterprises have 25 – 49% of production of branches,
c). Non – Concentration branch if the biggest enterprises have less 25% of production of branches.

The concentration indicator of the Polish insurance market from 2004 to 2011 is presented in Table 2 below.

[7] The calculation of the concentration indicator was done according E. Kafkova's methodology applied while her calculating the indicators of the Slovakian insurance market, E. Kafkova, Development of insurance market in Slovak Republic the period 2004 – 2010, Acta Oeconomica Cassoviensia, University of Economics in Bratislava, Faculty of Business Economics with a seat in Kosice, Kosice, 2011, p.85-87.

Table 2

Polish concentration indicator of insurance market from 2004 to 2011 (%)

Concentration indicator (%)	2004	2005	2006	2007	2008	2009	2010	2011
CR1 market	27,90	24,70	20,45	18,25	22,06	19,29	17,17	17,60
CR1 life	19,83	19,68	20,22	16,61	22,06	19,29	17,17	17,60
CR1 non - life	27,90	24,70	20,45	18,25	13,86	15,17	14,37	14,43
CR4 market	60,37	56,29	52,11	48,41	49,20	44,77	43,42	41,15
CR4 life	33,24	33,03	35,93	34,47	40,28	34,56	32,74	30,01
CR4 non - life	40,79	37,03	31,17	29,02	23,03	26,15	25,58	26,31
CR8 market	74,03	70,14	68,38	64,10	65,08	61,21	58,70	56,32
CR8 life	38,89	40,38	46,30	46,22	52,94	46,81	44,95	41,76
CR8 non - life	46,41	42,30	36,69	34,42	27,81	32,20	32,46	33,59
CR10 market	78,29	75,13	74,46	70,41	70,71	67,56	65,41	62,46
CR10 life	40,85	42,73	49,10	49,89	57,14	51,03	48,52	44,97
CR10 non - life	48,47	44,25	38,28	36,24	29,52	34,49	34,85	36,47

Source: Own calculation on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

In the Polish case, a high concentration indicator and its changes should be considered in the context of leaving the state monopoly of the insurance market and economy transformation processes. The concentration indicator of the Polish insurance market (measured by their market share of the four largest insurance companies) is the result of two factors. On the one side this a growing competition resulting from emerging new insurance companies on the market, which decreases market share of the largest company, which is PZU (with 94,6% in year 1991 to 17,6% in 2011 in life insurance as well relatively 75% and 14,43% in non-life). Consequently, the share of the four biggest insurance companies fell from 2004 to 2011 from 33,24% to 30,01% in life insurance and from 40,79% to 26,31% in non-life insurance. The other element influencing indicator CR4 is connected with the activity of foreign investors on the Polish insurance market. After the period of creating new companies observed during 1990s, a period of increased activity in taking over of capital companies occurred in the beginning of 21st century.

3.3 Herfindahl - Hirschman Index

Herfindahl - Hirschman Index (HHI) of the market concentration and defines the estimated level of density in a given sector as well as the level of

competition on a given market. The index is presented according the exaction presented below:

$$HHI = \sum_{i=1}^{n} xi^{2}$$

Where n is the number of all firms in an industry and x_i is the share of *i-th* firm in total industry sales. The resulting index as assigned to one of the ranges:

a). High industry concentration if HHI is more than 1,800.

b). Medium industry concentration if HHI is between 1,000 to 1,800.

c). Low industry concentration if HHI is less than 1,000.

The HHI[8] in Polish insurance market from 2004 to 2011 is presented on the Diagram 4 below.

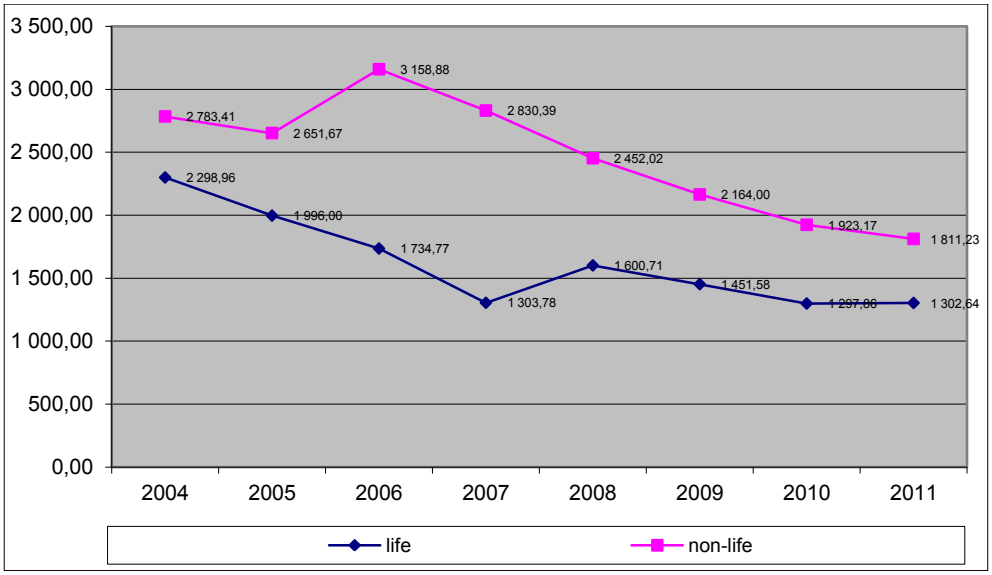


Figure 6

HHI in Polish insurance market from 2004 to 2011

Source: Own calculation on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

From 2004 to 2011 the HH index on the Polish insurance market gradually decreases in life and non-life insurance. Undoubtedly this is a consequence of market changes caused by an increasing competition as well as

[8] The calculation of the HHI was done according E. Kafkova's methodology applied while her calculating the indicators of the Slovakian insurance market, E. Kafkova, Development of insurance market in Slovak Republic the period 2004 – 2010, Acta Oeconomica Cassoviensia, University of Economics in Bratislava, Faculty of Business Economics with a seat in Kosice, Kosice, 2011, p.87-88.

searches, by small insurance companies, for new forms of reaching a client (for instance direct one) and searching for niches.

4. Chosen indicators of the insurance market

At present, we can differentiate two key functions of insurance: the social function, which is stabilizes the course of economic processes and ensuring. The safety of life to participating subjects. The other economic function enables the preservation of the continuity of economic processes as well as minimizing the consequence of random accidents covered by an insurance policy. The two functions can be related to the potential of insurance companies acting on the market by the angle of the results achieved by them. This allows us to assess the insurance level as well as its significance to a county economy.

4.1 Premium

The level of premium collected is a derivative of the economic development level of a country. This is also a reflection of processes occurring on the market. Insurance companies, working on the market, apart from taking a risk from the insured can also give a considerable impulse to the development of companies and market situation. A high level of insurance selling causes, among others the growth of insurance company deposits. \at the same time it contributes to the development of banks, mutual funds and other companies on the market. The increase in premiums also presents the level of affluence of subjects acting on the market and first of all of households as well as companies. The higher level of a client affluence, the more assets they insure and at the same time more financial means pass from clients to insurance companies. The changes of the written premium on the Polish insurance market is presented on Diagram 5 below.

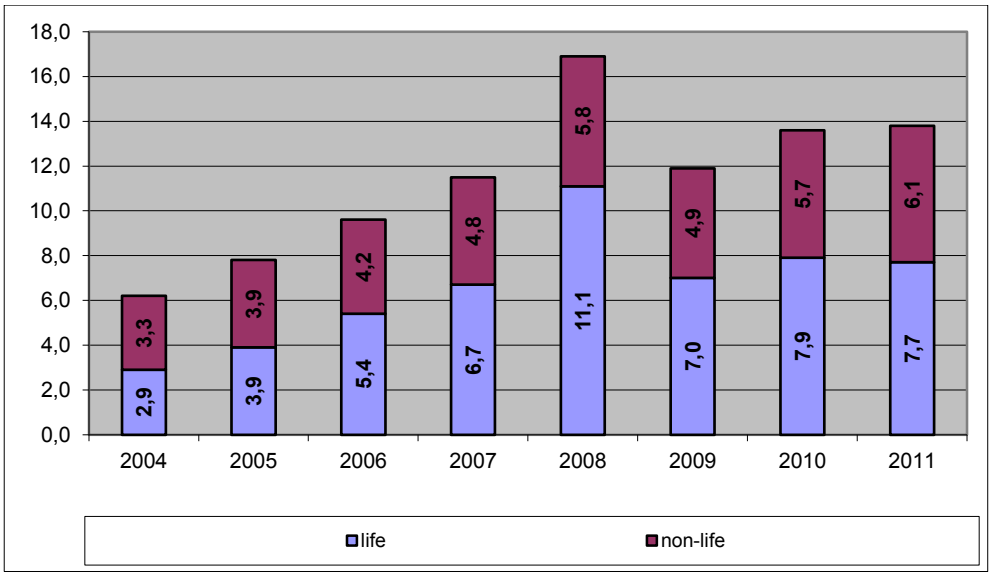
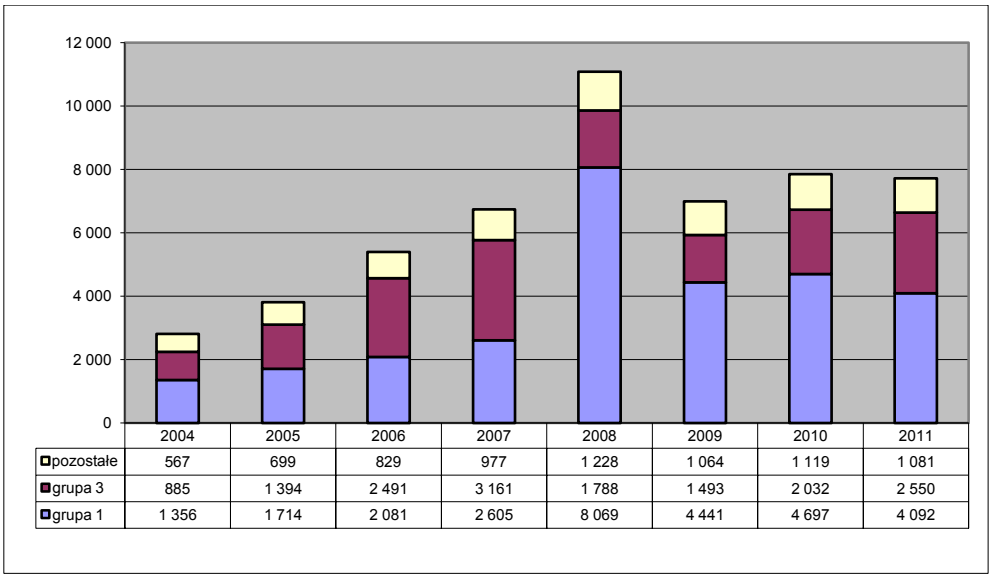


Figure 7
Written premium divided into life and non-life from 2004 to 2011 (billion EUR)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

As this can be seen from the presented data the Polish insurance market developed from 2004 to 2011. The highest level of the collected premium can be observed in 2008, which amounted to 16,8 billion EUR. The result of such a good result of the insurance market was a great interest in life insurance which were complementary products to bank products as well as products enabling to avoid the tax coming from bank deposit interest. This should be stressed that in 2010 a considerable break occurred in these kinds of products, which resulted in the fall of premiums on the market. This was also a consequence of the world financial crisis, which caused a lower interest in insurance by companies and individuals.

4.1.1 Structure of life insurance premium

Life insurance products: life (group 1), life with investment funds (group 3) belong to the most important product groups on the Polish market. Analyzing the structure of life insurance from 2004 to 2011 these groups are the dominant ones on the market. The data are presented on Diagram 6 below.



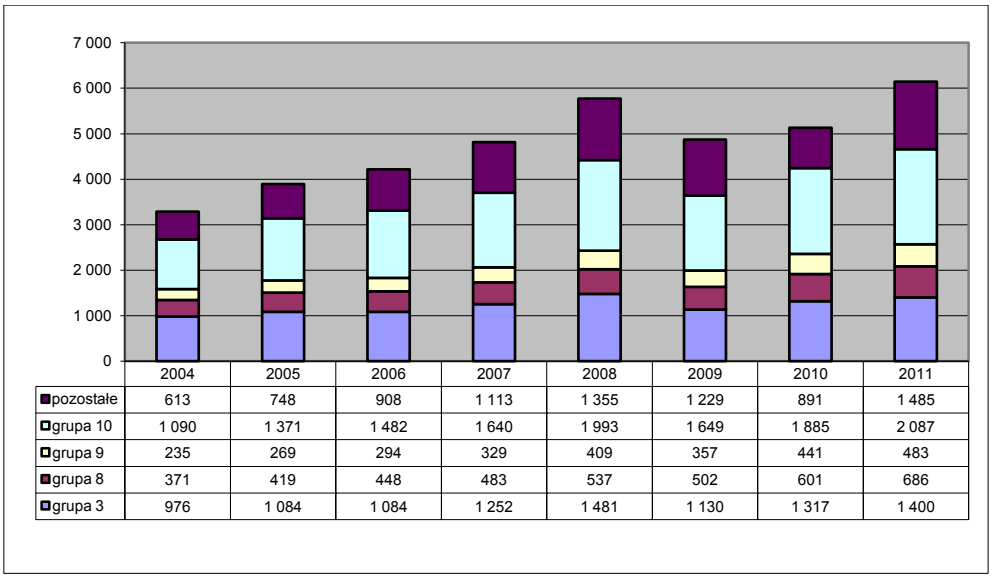
	2004	2005	2006	2007	2008	2009	2010	2011
pozostałe	567	699	829	977	1 228	1 064	1 119	1 081
grupa 3	885	1 394	2 491	3 161	1 788	1 493	2 032	2 550
grupa 1	1 356	1 714	2 081	2 605	8 069	4 441	4 697	4 092

Figure 8
Premium in insurance groups in life from 2004 to 2011 (mln EUR)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

Group 1 had the greatest share on the market from 2008 to 2011. This was caused by using life insurance as a security of bank loans, mainly mortgages. The sale development of insurance products by the bank distribution channel is the main factor influencing the growth of life insurance segment. This should be assumed that this development will continue because of the growing level of society income.

4.1.2 Structure of non-life premium

The most important product groups in non-life are: obligatory insurance against civil liability of holders of motor vehicles (group 10), auto – casco (group 3), property insurance (group 8) and remaining insurance connected with assets (group 9). The premium structure of non-life insurance from 2004 to 2011 is presented on diagram 7.



	2004	2005	2006	2007	2008	2009	2010	2011
pozostałe	613	748	908	1 113	1 355	1 229	891	1 485
grupa 10	1 090	1 371	1 482	1 640	1 993	1 649	1 885	2 087
grupa 9	235	269	294	329	409	357	441	483
grupa 8	371	419	448	483	537	502	601	686
grupa 3	976	1 084	1 084	1 252	1 481	1 130	1 317	1 400

Figure 9
Structure of non-life insurance from 2004 to 2011 (mln EUR)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

As this can easily be seen, the dominant position on the market is motor insurance (group 10 + 3). This is characteristic for emerging markets, to which the Polish market belongs. The Polish economy transformation, relatively low in comparison t old EU members, the level of income of the society cause Poles limit themselves to the most important needs. Furthermore companies acting on the Polish markets economize on insurance and only buy the most important one.

4.2 Claims

Insurance protection offered by insurance companies is not only collecting a premium but also paying claims. Claims are an inseparable element of insurance activity. Their amount is a derivative of the level of development of insurance market as well as the insurance awareness of clients. During the last years in the whole EU we can observe an increase in the average claim. This can particularly be seen in motor insurance. The data concerning the claims paid on the Polish insurance market from 2004 to 2011 are presented on diagram 8.

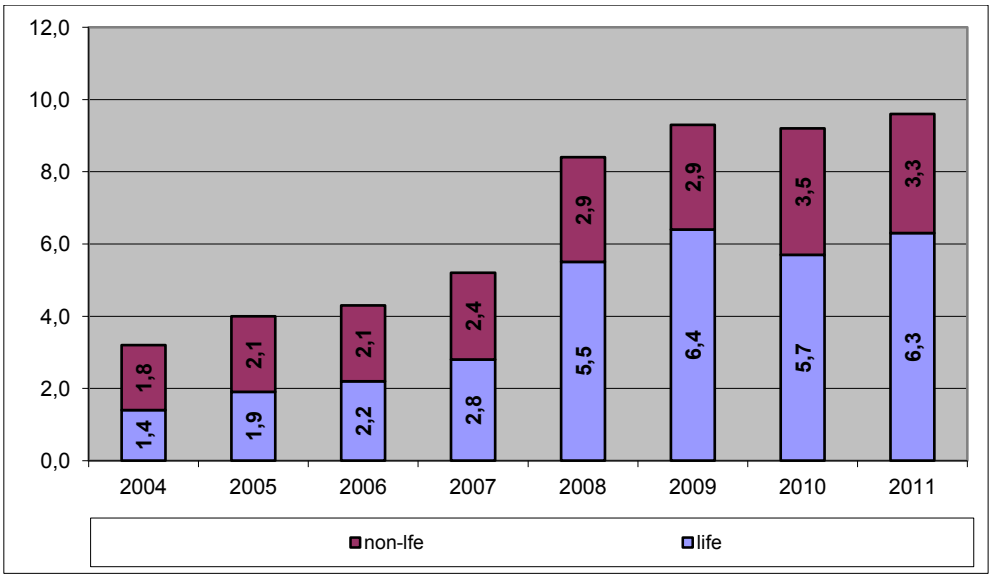


Figure 10
Claims paid on the Polish insurance market from 2004 to 2011 (billion EUR)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

Claims paid by insurance companies are an element of supporting companies and individuals in a situation of random accidents. Undoubtedly, they contribute to relieving their effects and allow them to keep further activity on the market. They are also an element used as a complement of the public social system, mainly in the scope of health insurance as well as pension funds. Analyzing the level of the claims paid in relation to collected premiums (the data are presented on diagram 9) this can be observed its significant growth from 2009 to 2011.

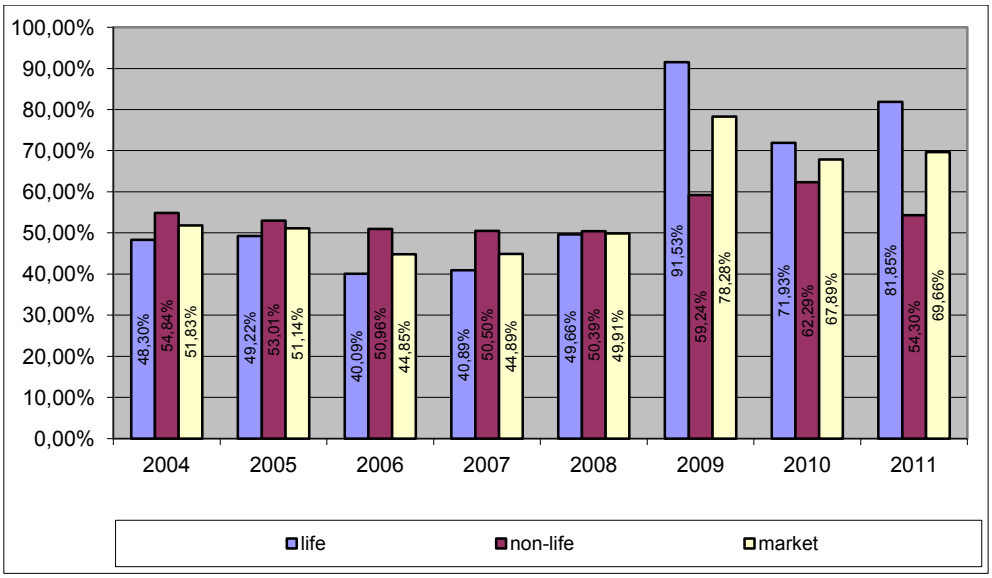


Figure 11
The level of the claims paid in relation to collected premiums from 2004 to 2011 (%)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

This should be assumed that the observed level of payments is a consequence of company problems resulting from the world crisis. Another element is the use of life insurance to transfer financial means within structured products offered by banks in which insurance protection is limited to minimum. This causes insurance companies, mainly life running after a premium enter market segments so far occupied by banks and investment funds.

5. Financial security of insurance companies

The level of insurance fund, being at the disposal of a insurance company decides about the economic guarantee of insurance protection. The influence on the fund have:

- their own capital
- proper policy in the scope of creating technical reserves,
- right policy of depositing free means,
- correct reinsurance agreements.

The financial security of insurance companies is therefore a key element within fulfilling agreements and insurance company development.

5.1 Technical reserves

In Poland technical reserves are created obligatorily and "are to cover current and future liabilities resulting from insurance agreements"[9]. Their main aim is ensuring of insurance guarantee to all the insured as well as financial security of insurance companies. This is worth stressing that reserves have an influence on the financial result of an insurance company and can be inflated in order to pay lower taxes or lowered in order to increase their profit and showing a better financial status of an insurance company. The phenomenon of lowering reserves is considered to be a greater threat because it may cause a disorder of insurance cover guarantee and as a consequence this may lead to a bankruptcy of an insurance company. This should be stressed that reserve lowering may increase policy competition on the market. However, a large portfolio underestimated policies in a long time increases the probability of a ruin of an insurance company. That is why this is important to keep reserves on their optimal level securing financial security of an insurance company. The value of reserves of Polish insurance companies from 2004 to 2011 is presented on diagram 10.

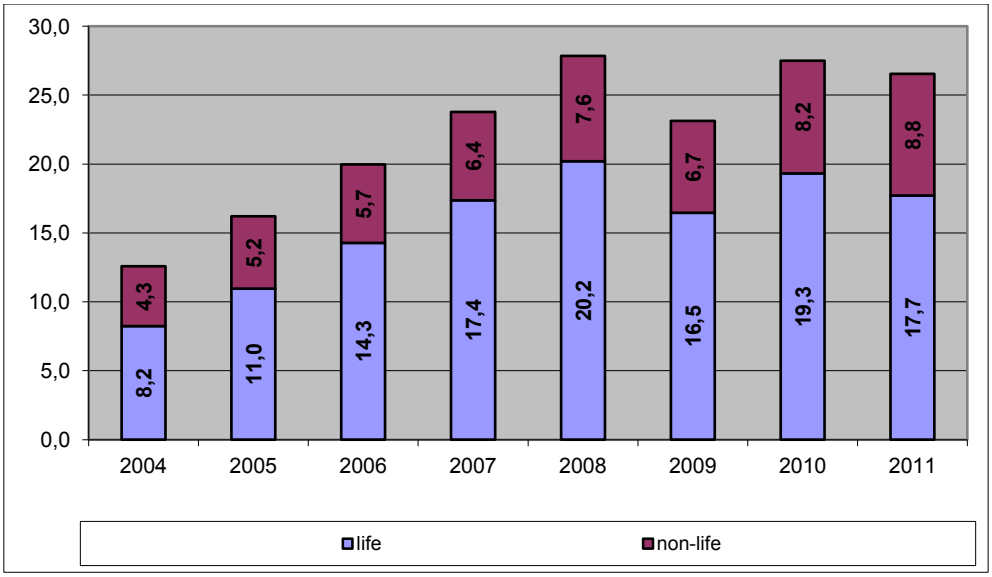


Figure 12
The value of technical reserves of Polish insurance companies from 2004 to 2011 (billion EUR)
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

This should be stressed that from 2004 to 2011 the reserve level rose successively. in life and non-life insurance. Undoubtedly this shows the increase

[9]Art. 149 ustawy z dnia 23 maja 2003 r. o działalności ubezpieczeniowej (Dz.U. nr 124, poz. 1154).

in insurance sector capitalization and consequently an increase of security of insurance companies working on the insurance market.

5.2 Technical reserve cover with assets

The indicator of technical reserve cover shows whether an insurance company has assets to cover their current and future liabilities to the insured, beneficiaries and the injured. The value of the indicator should exceed 100%. According to the article 154.6 of the insurance act of 22 May 2003 assets covering reserves can be:

- securities issued, guaranteed by the state treasury and international organizations whose member Poland is,
- bonds issued or guaranteed by self-government units or self-government associations,
- other debentures with a fixed or variable rate of interest,
- shares, also these quoted on stock markets as well as collection law and title to shares,
- participation units and investment certificates in investment funds,
- letters of deposit,
- loans, also secured by mortgage or by financial institution and loans resulting from agreements of life insurance,
- property ot its parts excluding property or its parts to use for the owner's needs,
- money,
- bank deposits,
- amounts due from reinsurance,
- reinsurance share in reserves,
- deposit amounts due ,
- amounts due from the insured resulting from insurance agreements,
- amounts due from insurance agents and brokers,
- amounts due from the state budget,
- fixed assets excluding property if the are entitled to depreciation,
- rents and interest,
- activated costs of acquisition in the scope in accordance with creating reserves,
- derivative instruments if they serve to lower a risk connected with other assets which a cover of reserves.

As this can be seen the spectrum of assets which are a cover of reserves is large. This allows insurance companies to apply these assets as a security of

financial guarantee of their financial safety. The level of covering reserves with assets from 2004 to 2011 is presented on diagram 11 below.

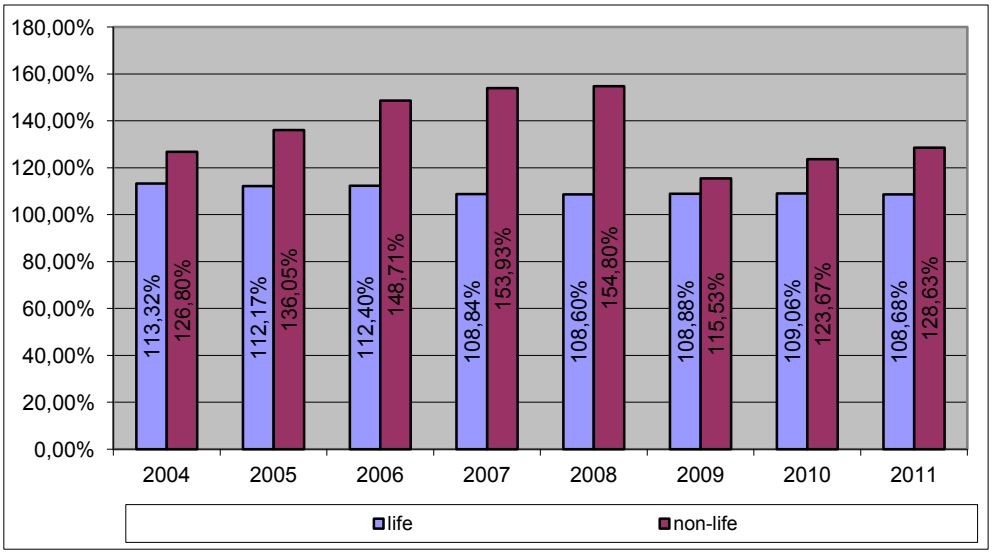


Figure 13
Level of covering reserves with assets from 2004 to 2011
Source: Own diagram on basis report's Polish Financial Supervision Authority dedicated Polish insurance market from 2004 to 2011.

This may be stated that reserves made by insurance companies from 2004 to 2011 ensured the guarantee of insurance protection for clients. This is worth mentioning that at the end of 20 century the interest in methods of assessment of financial status of insurance companies on the international insurance market. During this period in UE the Solvency I project was prepared and implemented. Its aim was to harmonize the requirements concerning the solvency margin. Unfortunately, the project was not finished and Solvency II replaced it. Its aim is to create a new system of capital requirements for insurance companies and a complex solvency of insurance companies. It is to be implemented in EU countries and EOG until the end of 2012.

Conclusion

The security of the financial system in Poland is a chief assets of the Polish economy. Despite an economic decrease the past years brought a stable development to the Polish financial market. The insurance market in Poland being a part of the financial market, by the integration with the unified market of EU has strengthened considerably. This is reflected, first of all, in security standards, a wide product offer and capital connections with renowned Western insurance corporations. During the economic boom (2004-2007) company profitability and affluence of households allowed us to an intensive development

of the insurance market. However, this is visible a high level of premium collection concentration. A spectacular increase in demand for life insurance was generated by households which searched attractive conditions of depositing their savings for a short time. The slow down in the economy being the consequence of the world financial crisis, which hurt Poland in 2008-2010 had a negative influence on the market. We noticed the premium lowering in life and non-life insurance. In life insurance an unfavorable influence appeared on very popular structured products like bancassurance in 2007-2008. In non-life assurance natural disasters, particularly floods, which happened in Poland in 2010 influenced negatively on insurance companies. However, it should be stressed that insurance companies acting in Poland fulfill statutory security norms, which influences stably on the financial market. Probably, its further development will be directed to improve financial security indicators, among others by implementing Solvency II, as well as new ways of reaching a client. Undoubtedly this will bring benefits within the scope of dynamic premium growth, improving financial results of insurance companies and increasing the society's trust to insurance. The role of insurance will grow as an element complementing the system of social security, particularly in the segment of pension funds as well as in commercial health insurance. All these factors will contribute to the strengthening of the insurance sector in Poland and by this of the whole financial system in the country.

References

1. E. Kafkova, Development of insurance market in Slovak Republic the period 2004 – 2010, Acta Oeconomica Cassoviensia, University of Economics in Bratislava, Faculty of Business Economics with a seat in Kosice, Kosice, 2011.
2. E. Kafkova a kolektiv, Zaklady poistovnictva, Vydavate'lstvo EKONOM, Kosice, 2012.
3. W. Nawrot, Exchange - Traded Funds (ETF). Nowe produkty na rynku funduszy inwestycyjnych. CeDeWu Sp. z o.o., Warszawa 2007.
4. "Raport o funkcjonowaniu polskiego rynku finansowego w ujęciu międzysektorowym", Urząd Komisji Nadzory Finansowego, Warszawa, 2011.
5. „Biuletyn roczny. Rynek ubezpieczeń 2004", Komisja Nadzoru Finansowego, Warszawa, 2005.
6. „Biuletyn roczny. Rynek ubezpieczeń 2006", Komisja Nadzoru Finansowego, Warszawa, 2006.
7. „Biuletyn roczny. Rynek ubezpieczeń 2006", Komisja Nadzoru Finansowego, Warszawa, 2007.
8. „Biuletyn roczny. Rynek ubezpieczeń 2007", Komisja Nadzoru Finansowego, Warszawa, 2008.
9. „Biuletyn roczny. Rynek ubezpieczeń 2008", Komisja Nadzoru Finansowego, Warszawa, 2009.
10. „Biuletyn roczny. Rynek ubezpieczeń 2009", Komisja Nadzoru Finansowego, Warszawa, 2010.

11. „Biuletyn roczny. Rynek ubezpieczeń 2010", Komisja Nadzoru Finansowego, Warszawa, 2011.
12. „Raport o stanie sektora ubezpieczeń po IV kwartałach 2011 roku", Urząd Komisji Nadzoru Finansowego, Warszawa, 2012.
13. Ustawa z dnia 21 lipca 2006 o nadzorze nad rynkiem finansowym (Dz. U. z 2006 r. Nr 157, poz. 1119).
14. Ustawa z dnia 22 maja 2003 r. o ubezpieczeniach obowiązkowych, Ubezpieczeniowym Funduszu Gwarancyjnym i Polskim Biurze Ubezpieczycieli Komunikacyjnych (Dz. U. z 2003 r, Nr 124, poz. 1152).
15. Ustawa z dnia 22 maja 2003 r. o nadzorze ubezpieczeniowym i emerytalnym oraz Rzeczniku Ubezpieczonych (Dz. U. z 2003 r., Nr 124, poz. 1153).
16. „Polski rynek ubezpieczeniowy 2004 – 2008", Główny Urząd Statystyczny, Warszawa, 2008.
17. „Polski rynek ubezpieczeniowy 2004 – 2010", Główny Urząd Statystyczny, Warszawa, 2010.
18. www.knf.gov.pl.
19. www.piu.org.pl.
20. www.pbuk.com.pl.
21. www.ufg.pl.

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THE DEVELOPMENT OF THE CZECH INSURANCE MARKET IN THE LAST PERIOD IN THE CONTEXT OF THE GLOBAL INSURANCE MARKETS

VÝVOJ NA ČESKOM POISTNOM TRHU V POSLEDNOM OBDOBÍ V KONTEXTE VÝVOJA NA SVETOVÝCH POISTNÝCH TRHOCH

Eva DUCHÁČKOVÁ

Abstract
Development on the world insurance market has considerable volatility. Insurance markets are affected by conditions in which the operation is carried commercial insurance. This is general economic conditions, as well as the presence, and extent of damage that are covered under insurance. Also, approaches by the regulation. Czech insurance market is evolving differently in life and non-life insurance. Life insurance has growth and stagnation or decrease in non-life insurance in the last period. The decrease in non-life insurance segment is mainly affected by developments in car insurance and business insurance coverage.

Keywords: insurance market, life insurance, non-life insurance, automobile insurance, catastrophe

Abstrakt
Vývoj na svetovom poistnom trhu vykazuje v poslednom období pomerne vysokú volatilitu. Poistný trh je ovplyvňovaný situáciou, v ktorej poisťovne prevádzkujú svoje poistné produkty, je ďalej ovplyvnený reguláciou a veľkú úlohu hrajú výskyt a rozsah škôd, ktoré ju v rámci poistných produktov kryjú. Na českom poistnom trhu dochádza k rozdielnemu vývoju v oblasti životného a neživotného poistenia. Pre životné poistenie je typický rast a pre neživotní poistenie v poslednom období stagnácia či pokles. Pokles neživotného poistenia je ovplyvnený predovšetkým vývojom v oblasti poistenia automobilov a poistenia podnikateľských rizík.

Kľúčové slová: poistný trh, životné poistenie, neživotné poistenie, automobilové poistenie, poistenie podnikateľských rizík

Introduction

The Czech insurance market has been experiencing volatility in the last period which has brought about certain changes in its structure. There used to be a long-term increase in premium written in the Czech insurance market, however, the recent period has shown stagnation. At the same time, particular segments of market have indicated specific developments. The development of the insurance market is affected both by economic conditions, especially by developments in the financial markets, and by the claims frequency (basically, regarding huge losses, there are floods with a grave impact every year) and also

by actual approaches of insurance companies. Some changes in the market are linked to the regulation and changes in the regulation enforced by the governments (new regulatory approaches implemented within the EU e.g. Solvency II, the gender discrimination ban in insurance industry). Due to the interconnection of markets, the Czech insurance market is to a certain extent influenced by the developments in the world insurance markets as well. The global developments in the world insurance market are also reflected in the Czech Republic.

1. Development of the world insurance market

Developments of the world insurance market were largely affected by the financial and economic crisis in the last years. In 2010 the world insurance market was stabilized, however, currently, there are concerns that it may be affected by the debt crisis. The financial and economic crisis had an impact on the life and also the non-life insurance, the former was hit more significantly.

Moreover, the world insurance market and its developments are strongly influenced, especially in the segment of the non-life insurance, by occurrence of major insurance events i.e. catastrophes.[1]

2011 was an exceptional year concerning the occurrence and the impact of natural disasters. The year 2011 saw record economic losses of 370 bn. USD from catastrophes. Insured losses from catastrophes in 2011 were the second highest ever, they reached 116 bn. USD. Out of this amount, 110 bn. USD were insured losses from natural disasters and 6 bn. USD were insured losses from man-made disasters.[2]

These huge losses were caused by the earthquake in Japan, New Zealand and Turkey and by floods in Australia and Thailand, whereas there were reported lower losses from hurricanes on the American continent in comparison to the previous years.

Insured losses from catastrophes reached exorbitant amounts of ca. 630 bn. USD between 2000 and 2011 (see Figure 1) and they increased dramatically compared to the previous years. It is due to the influence of their occurrence, but mainly due to the extent of insurance events from both the natural catastrophes and man-made disasters (catastrophic accidents, terrorism). Naturally, the penetration in the area which is hit by the catastrophe plays an important role and some natural disasters struck unexpectedly the areas which had not experienced such events before.

[1] Catastrophe – criteria used for 2012 according to Sigma Swiss Re: total losses 89.2 bn. USD, covered damage 44.6 bn. USD, number of victims 20.
[2] According to the data provided by Swiss Re.

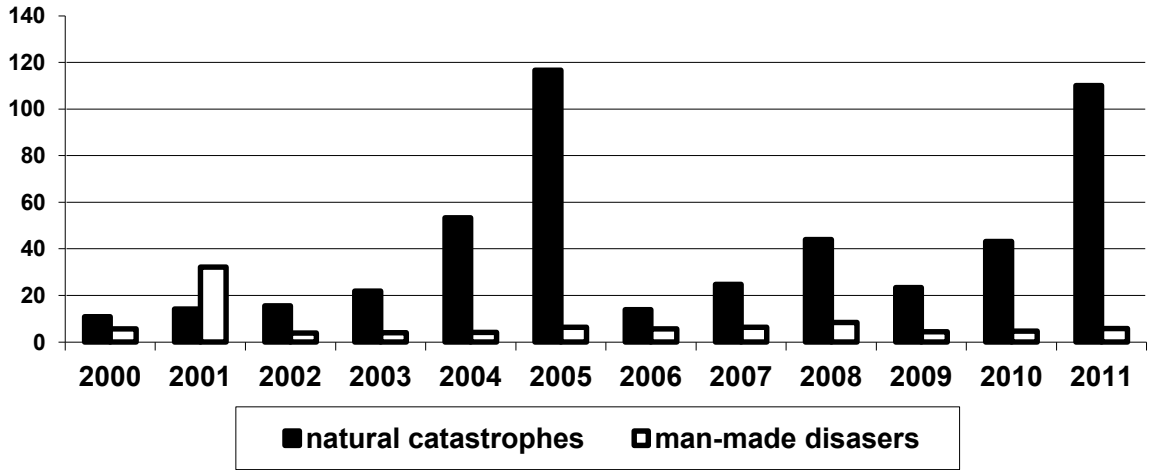

Figure 1
Insured catastrophe losses in bn. USD
Source: Natural catastrophes and man-made disasters in 2011, Sigma No. 2, 2012, available at www.swissre.com

The occurrence of high losses in the last years has led to the necessity to seek new instruments for covering these losses as the capacity of the insurance and reinsurance markets is not sufficient and in some cases, the insurance policies do not cover the damages adequately owing to the insurers' approach to their coverage. It is the case of the cooperation between the public sector and the commercial insurance branch, but there are also other instruments which use the capital market sources e.g. financial derivatives and cat bonds.

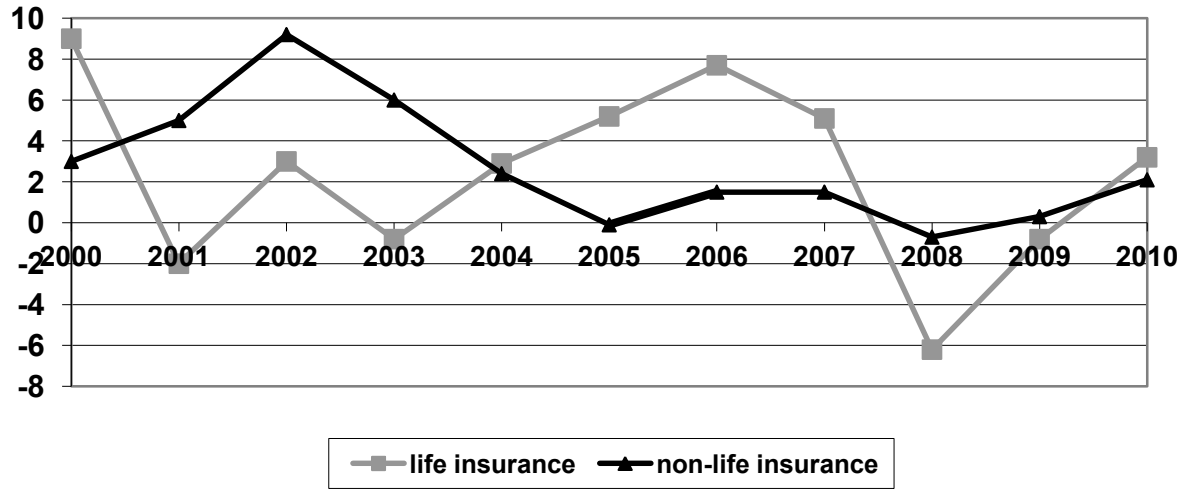

Figure 2
Real annual change in premium written – world insurance market in %
Source: New Swiss Re sigma study „World insurance in 2010" reveals growth in global premium volume and capital, Sigma No. 2, 2011, available at www. swissre.com

The development of the world insurance market has been characterized by diverse trends in premium written in every year since 2000 (see Figure 2). This is affected by above mentioned changes in general economic conditions, by

changes in the financial markets, by the occurrence of major insurance events as well as by different developments in particular areas. Certain areas e.g. China where commercial insurance played only a minor role in the past started to expand. Other areas e.g. the European Union underwent significant changes in the regulation of the insurance branch (e.g. current trends in monitoring the solvency of insurance companies).

It means that apart from the fluctuation in premium written, the changes in the role which particular areas play in the world insurance market are fundamental to its development. Since 2002 there has been a trend towards an increase in the share of emerging markets in the world insurance market. The share of these countries in the world insurance written amounted to 9.4% in 2009 and 15% in 2010. It is the result of higher growth rates of the premiums written in comparison with developed countries (see Figure 3).

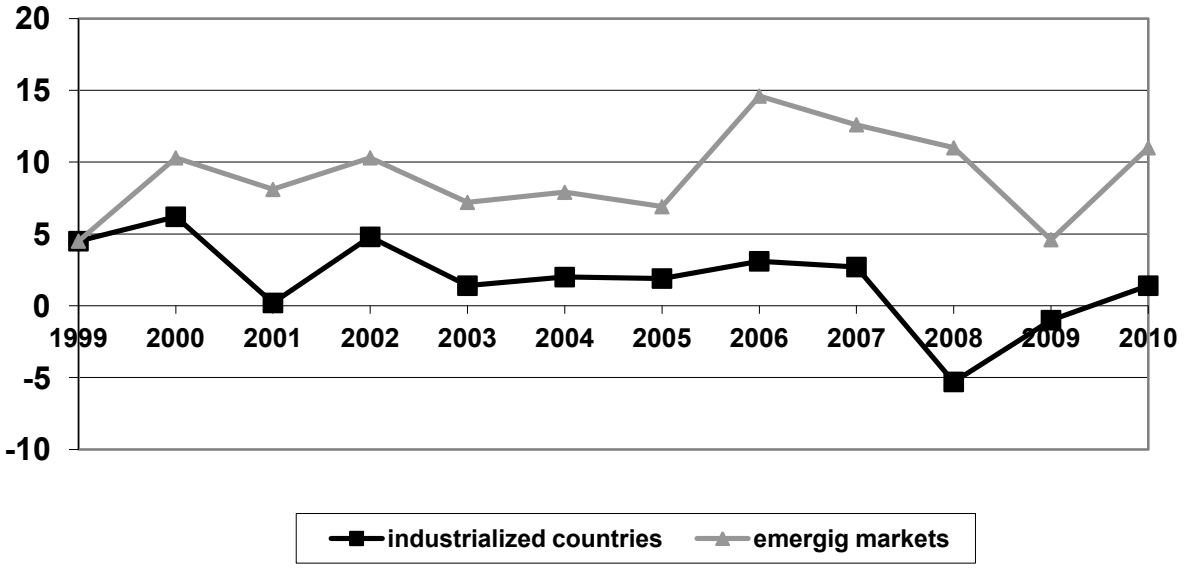

Figure 3
Real annual change in premiums written in industrialized countries and the emerging markets in%
Source: New Swiss Re sigma study „World insurance in 2010“ reveals growth in global premium volume and capital, Sigma No. 2, 2011, available at www. swissre.com

2. Development of the Czech insurance market

The development of the Czech insurance market from the perspective of the change inflation adjusted was characterized, up to recently, by a significant growth in insurance written. Changes came between 2004 and 2006 when the growth rates altered substantially, mainly due to the developments in the life insurance. 2007 showed growth again, especially in the segment of the life insurance. 2008 stands in contrast to 2007 and showed not only a slowdown in

growth, but even a decrease from the perspective of change inflation adjusted and this trend applies to both the life insurance and the non-life insurance (see Figure 4).

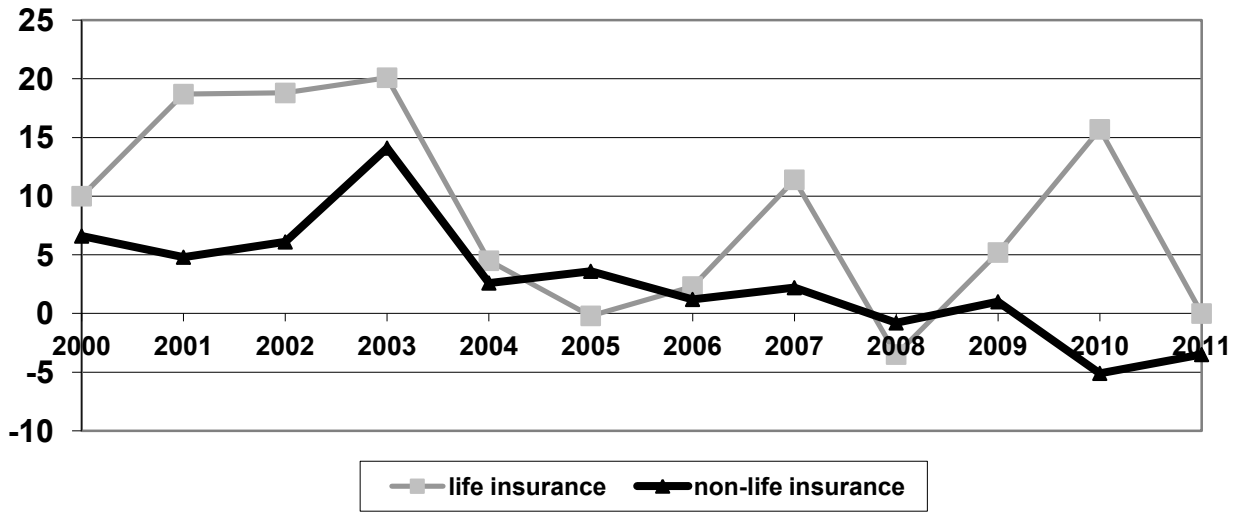

Figure 4
Real annual change in premium written – Czech insurance market in %
Source: New Swiss Re sigma study „World insurance in 2010" reveals growth in global premium volume and capital, Sigma No. 2, 2011, available at www. swissre.com, information of Czech Insurance Association, available at www.cap.cz

The development of the insurance market during the financial crisis, as indicated by the above mentioned figures, had an impact on the life insurance segment. Regarding the non-life insurance, the impact is different depending on the character of the non-life insurance branch. A negative impact on the development of the insurance market was clearly evident in the automobile insurance where lower car sales implied lower interest in relevant products. The segment of the property insurance, especially the business insurance, was similarly hit. However, there was an increased interest in the insurance products whose importance grows with financial crises, e.g. accounts receivable insurance, credit insurance or other kinds of insurance which deal with financial risks.

Definitely, the consequence of the impact of the financial crisis on the insurance markets is the search for solutions regarding the risk management and reassessment of models used within the financial management of insurance companies. The financial crisis and its aftermath affected, from the perspective of results, the investments of insurance companies. Subsequently, insurance companies were forced to react with changes in the creation of their insurance products.

Following period (2009 and 2010) shows an increase in the segment of the life insurance and a decrease in the segment of the non-life insurance

(especially in 2010) if we consider the change of premium volume inflation adjusted. The decrease in the non-life insurance segment during the last short period was caused by developments in particular segments of the non-life insurance. 2011 signals a change in the development of the insurance market because, even from the nominal point of view, the market saw a slight decline.

Due to the development of both insurance segments during last period, the share of insurance written in the life insurance and non-life insurance branch changed dramatically in favor of the life insurance (the share of the life insurance in the total insurance written was 32.2% in 2000 and it soared to 46.7% in 2011, if the non-market insurance was excluded from the statistics, the share of the life insurance would reach more than 51% - according to the statistical data of the Czech Insurance Association)

3. Recent development of the life insurance in the Czech republic

The fluctuation in the development of the life-insurance has been typical for the life insurance branch in recent years. Even though there was a significant growth in the life insurance branch in 2010, if the trends in the life insurance are analyzed more deeply, the conclusion must be drawn that the development is not proceeding in the direction which is favorable for the life insurance. The growth in the life insurance was driven by insurance policies purchases which often have only very little in common with classic life insurance products. These policies are short-term (usually for 4 or 5 years) with a single premium and with the minimum share of risk cover. The point is that they are in fact saving or insurance products which are very often offered by so called bank assurance institutions (life insurance companies incorporated into a financial group where the bank institution plays a dominant role). Such financial groups use these life insurance policies as an alternative to savings products. The premium written from these products went up by 60% in 2010 compared with 2009 (according to the data provided by the Czech Insurance Association). Moreover, the single premium written accounted for 40% of premium written in the life insurance. A certain role by the evaluation of the development in the life insurance branch plays the attitude whether to include single premium life insurance in the total life insurance indicators.

The stagnation continued in the periodically paid life insurance and the single premium life insurance in 2011. Besides, the development of the life insurance shows a growing share of the unit linked life insurance (a part of it is the single paid premium as well), a product that also does not correspond to the classic principles of the life insurance. By carrying out investment life insurance, the insurance company transfers the risk to clients. Currently, the premium written in the unit linked life insurance accounts for about one half of the total premium written in the life insurance.

Short-term life insurance policies represent a negative phenomenon in the market (besides, the number of life insurance policies is rather declining). Existing insurance policies are often terminated and new life insurance policies are arranged and purchased.

4. Development of the automobile insurance in the Czech republic

The automobile insurance constitutes an important part of the non-life insurance (currently it accounts for nearly 50% of premium written for the non-life insurance). A decline in premium written has been significant for last few years. In 2010 the premium written for the mandatory motor third party insurance decreased by 6.3% and for the motor hull insurance by 7%. In 2011 the premium written for the mandatory motor third party insurance declined by 8.1% and for the motor hull insurance by 3.9% (according to the data provided by Czech Insurance Association, see Figure 5).

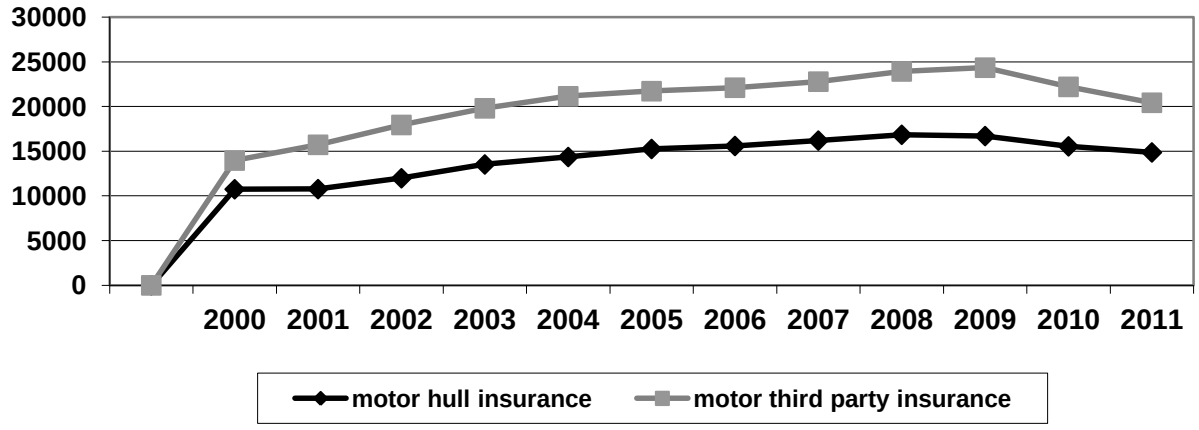

Figure 5
Premium written in automobile insurance on the Czech insurance market (million CZK)
Source: Annual report of the Czech Insurance Association 2000 – 2010, available at www.cap.cz

It also means that the share of the automobile insurance in the non-life insurance went down. Given the importance of the automobile insurance in the segment of the non-life insurance, its development contributes considerably to the overall development of the non-life insurance. To a certain extent, the decline during the financial and economic crisis was caused by a decrease in number of newly registered vehicles. However, the current development of premiums written (when the number of newly registered vehicles is rising again) is generated by a decline in the insurance price. The drop in the price of the motor hull insurance is related, to a certain extent, to the declining vehicle purchase price. On the other hand, the prices for car repair and spare parts are not going down. There are also new elements used by creating automobile insurance products, e.g. the choice of segmentation criteria or the use of so

called fleet insurance. The price is mainly affected by the cut-throat competition in the market and by the endeavor, especially in the branch of motor third party insurance, to gain a bigger market share. The average price of a new motor third party insurance policy was 4,354 CZK at the beginning of 2006 and 2,665 CZK in 2011.

5. Development of the business risk insurance in the Czech republic

The business risk insurance is the second most important part of the non-life insurance. This branch shows some specifics as well despite the fact that there is a much wider range of insurance products offered within the business risk insurance than within the automobile insurance. This range comprises property insurance, liability insurance and insurance of financial losses.

The insurance of financial losses is the area whose importance has been growing. It was particularly visible during the financial crisis when the interest in the accounts receivable insurance and the fidelity insurance went up. At the same time, offering and operating these products in the context of the financial instability was linked to a higher level of risk-taking.

Joining the single European insurance market has had an impact on the property insurance and the business liability insurance provided in the Czech insurance market. The evidence shows that enterprises have the property or the liability insurance from foreign insurers. This happened in connection with the entrance of these insurers to the Czech insurance market and with the fact that enterprises are very often connected with capital to foreign owners who prefer insurance provided by insurers in their home country. There is a fierce competition in the Czech business insurance market which reflects particularly in the insurance product prices. The price of the business insurance products has been declining for several years. The significant decrease in prices poses a question whether or not the insurance premium is sufficient to cover all claims for insurance payment. However, there exists another factor which affects the segment of the business insurance – the reinsurance. The reinsurance within the market began to be used more and more often in the Czech insurance market, i.e. Czech insurance companies provide other Czech insurers with active reinsurance. This is a problem because, from the statistical point of view, this is not excluded and the figures for premium written are stated with the insurance premium (once or even more times).

Conclusion

The development of the insurance markets and the Czech insurance market shows some specifics. This development reflects the conditions under which the commercial insurance is run. The world insurance market was

affected by the financial and economic crisis, particularly in the life insurance segment. The insurance markets started to grow again in both segments in 2010. The financial crisis did not have a substantial impact on the insurance market under the conditions of the Czech Republic. There was a significant growth in the life insurance segment in 2010, whereas non-life insurance (inflation adjusted) declined in 2010. The whole insurance market then experienced a decrease in 2011. The development of the insurance market is characterized by changes which represent rather a diversion from standard developments. The segment of the life insurance is affected by short-term insurance products and existing insurance policies are often terminated and the insurance is newly arranged. There has been a drop in premium written in the segment of non-life insurance, particularly in its two most important branches – in the automobile insurance and the business insurance. This drop has been caused mainly by the price decline (sometimes even below the acceptability level) due to the cut-throat competition.

The article is provided as one of the outputs of the research project of the Faculty of Finance and Accounting, University of Economics Prague, which is realized in the framework of institutional support VŠE IP100040.

References

1. DAŇHEL, Jaroslav, DUCHÁČKOVÁ, Eva. Obecné a zvláštní příčiny finanční krize a jejich důsledky pro regulaci jednotlivých segmentů finančních služeb. Ekonomický časopis**,** 2010, roč. 58, č. 1, s. 17–29. ISSN 0013-3035.
2. DUCHÁČKOVÁ, Eva. Vývoj v oblasti pojištění automobilů. Bratislava 11.11.2010. In: Dopady a dosledky finančnej krízy na sektor poisťovníctva [CD-ROM]. Bratislava : Ekonomická univerzita, 2010. 9 s. ISBN 978-80-225-2985-3.
3. DUCHÁČKOVÁ, Eva, DAŇHEL, Jaroslav. Teorie pojistných trhů. **1**. vyd. Praha : Professional Publishing, 2010. 216 s. ISBN 978-80-7431-015-7.
4. New Swiss Re sigma study „World insurance in 2010“ reveals growth in global premium volume and capital, Sigma No. 2, 2011, available at www. swissre.com.
5. Statistic information of the Czech insurance market, available at www.cap.cz

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TOURISTIC ATTRACTIVENESS OF CENTRAL EUROPE IN THE BASE OF THE HUNGARIAN CASE

ATRAKTÍVNOSŤ TURIZMU V STREDNEJ EURÓPE NA PRÍKLADE MAĎARSKA

Tibor KOVÁCS – Gábor PAPANEK – Zsuzsanna PAPANEK

Abstract
Touristic attractiveness of the Western and Central European regions differ significantly: while the most important touristic areas of Western Europe – Paris, London, etc. – attract huge crowds of people, Central-European countries are not satisfied with the number of their visitors. So, in our article we make an attempt to review – based on certain results of Eszterházy Károly College of Eger's research entitled „Educational innovation in the field of hotel-manager's training" and built on many interviews of tourist managers[1] - the touristic possibilities of the Central European catching up.

Keywords: tourism statistics, touristic attractiveness, top travel destinations

Abstrakt
Príťažlivosť turistických regiónov západnej a strednej Európy sa od seba významne líši: kým hlavné turistické oblasti západnej Európy - Paríž, Londýn, atď. – priťahujú obrovské masy ľudí, dovtedy stredoeurópske štáty nie sú spokojné s počtom svojich návštevníkov. V našom článku realizujeme pokus na jednu skúšku (výskum s názvom Vzdelávacie inovácie v oblasti tréningu manažérov hotelových zariadení, ktorý je založený na hodnotení výsledkov niektorých zistení a rozhovorov s manažérmi cestovného ruchu), ktorá analyzuje možnosti oživenia stredoeurópskeho turistického ruchu.

Kľúčové slová: štatistika cestovného ruchu, turistické atrakcie, najnavštevovanejšie destinácie

Introduction

Up to nowadays tourism has became a very important economic factor. A large and still increasing number of people are interested in tourist attractions, beautiful sights, well-known historical monuments, and destinations found in different regions, and promising great adventures, pleasant recreation or healing.

Statistics prove the above statement. The most common data used to describe tourist trade refer to the *international tourist flow* – more specifically to the tourist flow between countries. They reflect the nearly continuous growth of the number of tourists. According to the estimation of the International Tourism Barometer (2011) of the UNWTO – the organisation publishing worldwide

[1] The cited research can be read in details in the 2011 issue of Periodica Oeconomica published by the College.

accepted statistics of the touristic sphere –, the number of border-crossing tourists reached approximately 1 billion in 2010 in the world. The tourism trade income was over 900 billion USD (thus approached 700 billion Euros). It is good news for Europe that nearly half of the travellers were tourists visiting this continent. According also to the above data source of the UNWTO *most foreign tourists* entered France (77 million) in 2010 and the list goes on with the following nine countries: the USA (60 million), China (56 million), Spain (53 million), Italy (44 million), the United Kingdom (28 million), Turkey and Germany (27-27 million), Malaysia (25 million), and finally Mexico (23 million). However, based on UNWTO data as well, the changes are rapid; in 2009 the ten most visited countries of Europe (following the first six countries of the previous enumeration) were Austria, the Ukraine, Russia and Greece – still according to the extent of the tourist trade. At the same time the EUROSTAT – registering *guests spending at least 4 nights at commercial or private places of accommodation* – publishes a different order. According to the EUROSTAT, the number of guests in 2009 was 47 million in Germany, 34 million in France, 29 million in Great Britain, 25 million in Italy and 16 million in Spain (KSH[2]/EUROSTAT, 2011).

None of the Central-European[3] countries belong to the top European touristic destinations: they cannot accommodate even together 20 % of the tourists staying for at least four nights at European places of accommodation. In 2010 almost third of the Central European tourist trade was generated in Poland (10.766.000 persons), and nearly half of it was shared by three other countries: the Czech Republic (5.519.000), Romania (4.289.000) and Hungary (4.038.000). The rest is shared by Bulgaria (346.000), Estonia (339.000), Latvia (346.000), Lithuania (890.000), Slovenia (996.000), Slovakia (2.416.000) and the candidate Croatia (1.428.000) (KSH/EUROSTAT, 2011). However, the above mentioned figures of the examined countries, comparing these data with the relevant data of Austria (4.160.000) or Greece (3.977.000), cannot be considered minor.

Some sources publish data on tourist trade of the most visited cities as well. According to the UNWTO in 2010 the cities most visited *by foreigners* were Paris and London (approx. 15 million tourists), followed by New York (10 million), Antalya, Singapore, Kuala Lumpur (9 million), then – without taking into account the Chinese tourists (!) – Hong Kong and Dubai (8 million), finally Istanbul and Bangkok (7 million) (Wikipedia, 2011).

- It is worth to mention that there exist rankings prepared by using different methods than the strict statistical ones. In 2011 the World Top Ten city recommendations of the Lonely Planet called the attention to interesting destinations which are visited by unworthily few people. Although New York is ranked first, but it is followed by less known yet very pleasant

[2] Hungarian Central Statistical Office.

[3] Hereinafter – basically due to the limitations of our information database – we make an attempt to examine mostly the positions of states from the given area entering the EU in the past few years.

cities of certain popular countries, like Tangier (Morocco), Iquitos (Peru) and Chiang Mai (Thailand). Regarding visitor numbers the listed European cities (Valencia on the fifth place, and Gent on the seventh) are not typically top attractions either. While, on the Viator Travel Agency's list of the most memorable sights of 2010 (prepared on the basis of the votes of the agency's travellers) Paris was the most attractive destination, and it was followed by Las Vegas. From Europe we can also see Rome, London, and Florence among the first ten destinations (besides Paris), and they are followed by Venice, Munich, Barcelona, Madrid, Milan, Amsterdam, Athens and Vienna among the first twenty tourist attractions.

Exploiting the economic possibilities arising from the great and growing tourist trade would be worth for every country, every economy. This is why the development of tourism has been aimed by most Central European countries in recent decades. Thus it seems reasonable to examine on the one hand, the results reached so far and on the other hand, the further possibilities.

1. Methodological remarks

The analysis of the tourist trade cannot be complete without dealing with methodological issues. Although what is meant "tourism" nowadays was frequent in ancient times[4], even the term *'tourist'* is not defined uniformly.[5] According to the worldwide accepted definition of the World Tourism Organisation of the United Nations, **"***a tourist is a person travelling from their usual environment to a different place (staying there for at least one day) for the purpose of leisure, business or other"* (UNWTO, 1995, p. 14)**.** However, in the statistical practice other interpretations are used as well, as it shown on the following pages. The traditional notion of tourist is narrower than the 'official' ones; according to an ironic definition 'the aim of travel is to go where everyone else has gone, see what everyone else has seen and experience all that everyone else has done so' (Perrottet 2002, p. 25).

The precise interpretation of our topic: the touristic attractiveness has not been formed either. Although it is a general view that this attractiveness can be measured by visitor numbers of tourist "destinations" (sights, attractions), but the unified definition of tourist destinations did not evolved. The UN (2010, p. 1) for instance, when listing their types – the motivation for setting off – apart from leisure and business purposes mentions health and educational reasons as well, explaining the "other purposes" stated in the "tourist" definition above. However, sometimes the measuring practice does not follow the cited

[4] It is often referred that the first trade routes had been created in prehistoric times and the Greeks literally organised visitors for the Olympic Games in 776 BC (Lengyel, 1992). Perrottet (2002) provides a persuading review of Roman tourism aiming at visiting the well-known sights.
[5] In detail see e.g. UN (2010).

recommendations. E.g. we have to recognise that the destinations mentioned in the above world-rankings are mainly historical and cultural attractions, places of amusement. There aren't any natural landscapes, resting places, educational or healing spots among them. Although we cannot be certain of its reasons, we can assume that it is in connection with marketing issues or with the difficulties of calculating the number of the visitors. In the next paragraph we will show other problems as well.

The reliability of the data on tourist trade (e.g. the above mentioned statistics) is also limited. For example the statistics concerning international tourist flow within the EU are simple estimations since the elimination of border controls among European countries – and they are utterly inadequate to describe the total extent of the global tourism trade, since they do not take into account *domestic* tourism at all.

Evaluation of the *number of travellers visiting certain cities* is even more complicated. *The UNWTO* a*nalyzes the foreign tourist trade* in this case as well. The Hungarian Central Statistical Office's data collecting registers the data on (commercial) accommodation turnover; an important positive feature of it is that it takes into account not only the visits of foreigners but (separately) the visits of domestic tourists as well. Nevertheless the published data include most often not only the turnover of the travels motivated by touristic purposes, but also that of those motivated by "other" purposes.

2. Characteristics of the Central European destinations

The more detailed statistics reveal *strong concentration of the attractions* (guest turnover) *within* most *countries*. Hungarian data show particularly well this phenomenon. The *city* receiving the most tourists in the country is Budapest. The capital's tourist's trade (6 million tourists based on the number of bed nights) is quite high even in international comparison. Nearly half – in 2010 42 % – of the foreign tourists staying for at least one night in the country came to the capital city. More than quarter of the tourists visited the West-Hungarian region, and one-eighth of them visited Lake Balaton (KSH 2011). Among domestic tourists Lake Balaton was the most visited destination of the country (KSH, 2011/b). On the most visited Hungarian settlements' list Hévíz (900.000 nights), Hajdúszoboszló (800.000), Bük (700.000), Siófok, Balatonfüred and Sopron (500-500.000), Zalakaros and Sárvár (400.000) and finally Debrecen (300.000) follows (with significantly lower tourist flow) the first Budapest (MT[6], 2011). Thus the geographical distribution of the remarkably low number of visitors of the Hungarian country towns – whose tourist flow is lagging far behind the visitor number of the popular West European small towns – is also unbalanced.

[6] Hungarian Tourism Ltd.

Estimations referring to the attractiveness of the different tourist *destinations* – historical and cultural places of interest, natural sights, places of amusement and recreation in the approach of the Forbes magazine – are even more problematic than the information related to national or urban tourist flow.

- The well known 2007 year Forbes list[7] of landscapes and buildings ranked a New York street corner, Times Square at the first place with 35 million visitors. The second place was occupied by a park in Washington DC, the National Mall with 25 million visitors, and at the third place stood Disney World Florida, with 17 million visitors. The Trafalgar Square of London, the Notre Dame of Paris and the Disneyland near Paris are the only European destinations which are represented among the first ten places of the list (with 17, 12 and 10 million visitors per year respectively). Apart from the above mentioned ones, only 3 other European sights are found among the 11th-20th top destinations: the Sacre Coeur, the Louvre and the Eiffel Tower (with 8-6 million visitors each). The 21st place is occupied by the Pleasure Beach of Blackpool; the 25-27th are occupied by the Pompidou Centre of Paris, the Tate Gallery and the British Museum of London, while the 29th of the ranking is the National Gallery of London. Looking at the group of the first 50 sights of the Forbes list – apart from the above mentioned European sights found between the first 30 – we can find the following European spots: the Tivoli Gardens of Copenhagen, the Vatican and the Coliseum of Rome, the Natural History Museum of London and the London Eye, the Palace of Versailles, Pompeii, and the Hermitage of Saint Petersburg (the latter with 2.5 million visitors).

The above list reflects many problems. Although *sometimes* the cited data are more or less exact (when *for example they are prepared on the basis of the number of the issued admission cards*), but they often take into account visitors arriving there for a period shorter than one day (i.e. the minimum duration of the absence from place of residence defined by the UNWTO is not fulfilled). *Other times these estimations are made by using quite uncertain methods*. For example, "what sort of method the number of tourists turning up at/in the given street corner or public park were counted with?" is an interesting question. The ironic remarks of Larriva – Weisert (2007) have provoked also significant echo worldwide; e.g. their criticism that in spite of the UNWTO's recommendations this ranking does not take into account the travels based on religious purposes (e.g. pilgrimage to Mecca).

Furthermore, despite the (occasional) studies on the subject, it has not been revealed which are those sights that actually attract visitors to Central Europe. It is obvious although that several detailed inventory of the potential

[7] The first travel list in history was the Seven Wonders of the Ancient World. It was first mentioned by Antipater of Sidon in his epigram written in the 2nd century BC. The list has changed a lot during the thousands of years, today of the seven original wonders only the Great Pyramid of Giza remains.

destinations have been prepared. For example, in accordance with the homepage www.slovak-republik.org/attractions/ the „top" Slovak attractions are the followings: in Levoča the biggest wooden altar in the world, Spiš castle, Kremnica mint, Janko král' orchard in Bratislava, Ochtinská aragonite cave, Dobšinská ice cave, botanic garden on Lomnický peak, wooden bridge in Kolárovo (and after this list a rich assortment of other attractions can be found). In turn, for instance the MT (2011/b) recommends visiting the following Hungarian attraction types: historical monuments, 8 World Heritage Sites, the Lake Balaton, 10 national parks (among them the Puszta, the Hungarian Desert), thermal waters (like Hévíz), gastronomic supply (including the wines of Tokaj and Eger), cultural events, folklore programmes and Budapest (including the Danube, the Parliament, the Synagogue and thermal baths). All these inventories make doubtless that the countries of the region can draw up numerous attractions worth visiting.

- Remarkable element of the presented Central-European destination-lists that their structure differs from the above outlined international one; it includes not only historical-cultural sights and places of amusement, but natural and healing destinations (like the Hungarian *spas* of Bük, Debrecen, Sárvár, Eger, Gyula, Hajdúszoboszló, Harkány, Hévíz, Zalakaros etc. and the recreation and holiday resorts of Lake Balaton) too.

However, the cited lists do not inform about the *visitor numbers* of the sights mentioned. We did not find data on the *tourist trade* of the Slovak destinations either. In turn, the Hungarian analysis of the MT (2011) states only the following: 'In 2010, besides Budapest, the most popular settlements among foreigners visiting Hungary were those having medicinal baths and those being close to Lake Balaton.' Point 'g' of the Hungarian National Tourism Development Strategy's (NTS) 2007 year monitoring stated yet that the most significant tourist attractions' tourist trade has not been examined in detail (ÖTM, 2008, 3. o.).

- Due to the exposed only a very uncertain answer can be given to the question *which destinations have to be improved* using the given sources in order to increase visitor number. For example, the castle-road which begins with Karlštein (not far from Praha), or with the Austrian Rapottenstein, and goes through the Slovak Trenčin and Orava Castles, then through the Ukrainian Mukacheve till the Roumain Hunedoara and Bran Castles (and touch many other romantic fortress as well) would be a unique and peculiar offer. Some countries also expect obvious success offering holiday, outdoor sport facilities (such as water[8] – at other places skiing – makings). Borsi – Viszt (2010) make it probable that to increase

[8] The unused opportunities are exemplified by the fact that Hungarian rivers are used only by foreign holiday boats and the few years ago significant summer boating (e.g. on the Római Beach in Budapest) also became less frequent.

the cultural attraction of the region's capitals would also be profitable. Because of the rich gastronomic traditions of the region, in many cases the reanimation of these might enhance the competitiveness of the host sector (and many sights) much better than increasing the number of cultural events.[9] However, to work out the actual development plans more reliable information would be needed than these mere presumptions.

Another unfavourable finding of our research is that in most countries the quoted *lack of data* is combined with the *poor marketing of tourism and catering*. The already mentioned research of the Eszterházy Károly College (EKF) of Eger has found, for instance that leaders of the tourism-catering sphere consider firmly inadequate the knowledge of the Hungarian population, and even that of the trainees and entrants concerning the Hungarian and the European tourist attractions. This problem is well characterized by the fact that in his book (National Geographic, 2007) published in Hungarian (i.e. written in the attempt of gaining the sympathy of the Hungarian readers), the National Geographic mentions only the following Hungarian sights as commensurable with the international ones: Danube cruise (as the end of the German-Austrian section), sightseeing tour of Budapest by bus, the Capital's panorama seen from the tram number 2, Academy of Music and the so called "children's railway" in Budapest, as well as a wine-tour in Tokaj and its environs. Most countries of our region receive even less attention. Only the following destinations are mentioned in the book: the Bulgarian-Romanian Black Sea Canal; Charles Bridge, Old Town District, Dvořak Museum in Prague and the Czech beer; the Croatian Dubrovnik and the Adria coastline; the Wieliczka Salt Mine in Poland; the Romanian Carpathians, the cycling tour in Transylvania, Moldavian monasteries and the Danube Delta; the cuisine of the Baltic countries; Tallin, Lake Peipsi and Suur Munamägi Observation Tower in Estonia; the Latvian Open-Air Ethnographic Museum in Riga; and Park Grütas in Lithuania. It is striking that the book does not mention Slovenian and Slovak attractions (especially the lack of the presentation of the Slovak part of the Carpathians and the Danube is more than conspicuous).

3. Possibilities of the increase of attractiveness

During the past decades several governmental documents have (rightly) judged dissatisfactory the actual number of visitors, and they have also defined tourism development as their objective. Many countries have worked out their detailed development strategy for the beginning of the 21st century. In Hungary,

[9] Prague attracts masses from all over Europe not only with its beautiful historical centre but also with the beer offer. Hungarian wines have not been able to create similar attraction up to now.

the MT (2005) reviews the tasks for 2005-2013; the New Széchenyi Plan (MK[10], 2011) considers better exploitation of the health tourism's possibilities a vital economic objective of the present days; and the tourism strategy for the coming years is also being processed (NGM, 2011). We could also mention the 'Marketing Strategy of Slovenian Tourism 2007-2011' based on the 'Development Plan and Policies of Slovene Tourism 2007-2011'; as well as the 'State Tourism Policy Concept in the Czech Republic for 2007-2013' and the polish 'Directions for Tourism Development until 2015'. Various publications and articles were written on this subject as well. The problems to be solved and the tasks to be fulfilled in order to increase the attractiveness are discussed in all these documents.

We think however that the experiences of the recent years query that the efforts of a small country alone can be sufficient to achieve success. It is probable for example, that international co-operation, e.g. creation and promotion of some so called "Central European" tourist-roads, thematic hikes going through 2-3 countries would be more effective. Of course, the publicity cannot compensate the execution of other tasks. These tasks can be categorised in the following four groups.

1. The first group of tasks is related to the *development of the information-base* of the touristic destinations, judged above to be insufficient. Visitor-statistics would be in sore need to prepare in order to properly prove and prepare the development decision makings. Determination of sights seeming to be potentially the most attractive (and the publicity of their data) would be especially important.
2. On the second place we can mention probably *the most difficult group of tasks, the development of the touristic 'products' of the region.* Although it should also be taken into account that the means of most states are limited, far from being enough to settle all destinations. Yet, it can hardly be disputed that realising certain tasks is very often not only a question of financial means, but rather that of the quality of human resources. Besides, concentrating on the development of the most visited spots or those which could be transformed into places with significant attractiveness, the necessary financial sources (and human factors) can also be put up.

   In connection with our actual tasks the well-known present-day problems can be authoritative. In some touristic sights of the region even the reservation technique of many host institutions is non-competitive (they do not have websites or the existing ones are hardly available, registration is uneasy and unreliable). Some of the destinations are very hard to approach due to dissatisfactory public transport and bad roads – as it is in Hungary even in the case of the World Heritage Sights of Hollókő or Aggtelek Stalactite Cave. The state of several sights, representing otherwise huge

[10] Hungarian Government.

potential attractiveness, has decayed, their direct infrastructure (cleanliness of the environment, number of restaurants and toilets, supply of health service etc.) do not meet the requirements either. There are several examples that the given attraction is closed even in the high season. For taking the advantages of our region's touristic possibilities, all these deficiency (beginning with the problems of the most visited attractions) should be corrected.

3. Improving *marketing activities* is also indispensable, since being only good and having no bush is insufficient not only in the case of wines, but in the case of all other touristic products. It is worth considering for instance that according to the statistics of the Hungarian Tourism Agency the most important factors drawing the attention to the given destinations are invitations from friends and relatives, favourable experiences of previous visits, recommendations of acquaintances, relatives, while the influence of expensive websites, brochures, media communications etc. can hardly be felt. Moreover, it seems that proposing to focus upon certain destinations can be one of our most important recommendations concerning the cost-effectiveness questions as well (i.e. spending the majority of financial resources on advertising those destinations which are to be developed into brands).

   As it is proved by the well-known examples of some countries (e.g. views of the 'Great Ocean Road' advertised by Australia, the 'Death Road' of Bolivia opened for cyclists /National, 2007, p. 301/, or the safaris of Kenya organised to the Red Savannah), the above mentioned task are solvable.

4. The fourth group of tasks contains the *social tasks* which are often neglected although they *promise* perhaps *the most results*. According to the earlier mentioned EKF study it very often happens that Hungarian hosts are unprepared: their command of languages is inadequate in most places, they neglect the internationally common standards of services, they are not aware of the programmes recommendable for visitors etc. This suggests educational imperfections, thus task in the area of education. However, in our region the general attitude of the residents (especially the improper appreciation of guests) causes even greater problems in the tourism (and in almost every field of life). For instance the press sometimes publish reports vouching on the unfriendly relationship (such as citizen claims[11] on regulating the places of amusement for youngsters in university towns). In some cases law breaking guest-deterring examples are also revealed, e.g. impudent overbillings.[12] The number of visitors to neighbouring countries is sometimes moderated by nationalist conflicts as well. And unfortunately the general problems of extreme bureaucracy and high taxes also exist. Obviously due to

[11] In Western-European university towns sports and entertaining amenities were created in a way that is accepted by the local population.
[12] For example: Half a million for three beers. Magyar Nemzet, November 13. 2011., p. 17.

the strengthening international competition realisation of the tourism-catering sector's objectives can only be reached by solving the indicated problems in a social co-operation. 'A waiter who is unable to smile should have been born a guest' – used to say Károly Gundel, the well-known figure of the Hungarian catering industry. It is also doubtless that investing in the improvement of the indicated problems would be worthwhile.

References

1. BORSI, B. – VISZT, E. (2010): *A kreatív és kulturális ágazatok (CCI) szerepe és növekedési lehetősége a Budapest Metropolisz Régió gazdaságában*. *(Role and possibility of growth of the creative and cultural industries (CCI) in the economy of the Budapest Metropolis Region).* Studio Metropolitana. Bp.
2. Forbes Traveller (2007. 04. 30.): *Top 50 most visited tourist attractions*. http://thehopefultraveler.blogspot.com/2007/07/top-50-most-visited-toursit-attractions.html
3. Itthon.hu (2011): *Látnivalók Magyarországon. (Tourist Attractions in Hungary).* http://itthon.hu/latnivalok (letöltve: 2011. augusztus)
4. Kodolányi János Főiskola (2011): *Az idegenforgalmi kínálat*. *(Supply of tourism).* Jegyzet. Dunaújváros
5. KPMG (2002): *Magyarország ismertsége és imázsa Olaszországban, az olaszok utazási szokásai. (Reputation and Image of Hungary in Italy, Italian travel habits)*. Turizmus Bulletin 4. sz.
6. KSH (2011): *Nemzetközi turisztikai kereslet 2010*. *Gyorstájékoztató. (International touristic demand 2010. Quick information)*. 2011. március.
7. KSH (2011/b): *Kereskedelmi szálláshelyek forgalma 2010*. (*Tourist flow at the commercial places of accomodation 2010.)*
8. KSH/EUROSTAT (2011): *Táblák. (Tables.)* http://portal.ksh.hu/pls/ksh/docs/hun/eurostat_tablak/tabl/tin00045.html (letöltve: 2011. augusztus)
9. LARRIVA, S. - WEISERT, G. (2007): *50 most visited tourist attractions in the world*. Forbes Traveller. 30. apr.
10. LENGYEL, M. (1992): *A turizmus általános elmélete*. (*General Tourism Theory).* Viva. Budapest.
11. Lonely Planet (2010): *LP's Top 10 cities for 2011*. http://www.lonelyplanet.com/usa/new-york-city/travel-tips-and-articles/76165 (letöltve: 2011. augusztus)
12. MK (Magyarország Kormánya) (2011): *Új Széchenyi Terv. (New Széchenyi Plan)*. Bp.
13. MT (Magyar Turizmus Rt.) (2005): *Nemzeti Turizmusfejlesztési Stratégia 2005-2013. (National Tourism Development Strategy 2005-2013)*.
14. MT (2011): *2010 leglátogatottabb települései Magyarországon. (Most visited cities of Hungary in 2010)*. http://itthon.hu/sajtoszoba/2010-leglatogatottabb (letöltve: 2011. augusztus)
15. MT (2011/b): *Medicinal and Spa Tourism Study Tour*. Press material. Bp.
16. NAGY, A. (2002): *A Világörökséghez tartozó helyszínek turisztikai infra- és szupra-struktúrája. (Touristic infra- and super-structure of World Heritage Sites)*. Turizmus Bulletin. 4. sz.
17. National Geographic (2007): *Életre szóló kalandok. 500 látnivaló a világ minden tájáról.*

(Adventures for a life. 500 "must to see" sights of the world). Geographia. Bp.
18. NGM (Nemzetgazdasági Minisztérium) (2011): *Turizmusfejlesztési stratégia. Vitairat*. *(Tourism Development Strategy. Dispute.)* Bp.
19. OECD (2010): Tourism Trends and Policies 2010; http://books.google.hu/books?id=bQum9p3q6UYC&pg=PA245&lpg=PA245&dq=czech+tourism+strategy&source=bl&ots=QSWPt0qNxX&sig=_5rGrkUD4Z3YzFf1fVSBcek6TqE&hl=hu&sa=X&ei=gCQLT_zcFbDY4QT7-eSNCA&ved=0CFsQ6AEwBQ#v=onepage&q=hungary%20%20tourism%20&f=false (letöltve: 2011. augusztus)
20. ÖTM (Önkormányzati és Területfejlesztési Minisztérium) (2008): *Monitoring-jelentés a NTS megvalósulásáról 2005-2007*. *(Monitoring-report on the fulfillment of the National Tourism Strategy 2005-2007).* Bp.
21. PERROTTET, T. (2002): *Pagan Holiday. On the Trail of Ancient Roman Tourists.* Random House. In Hungarian: Ókori vakáció. Tercium. Bp. 2004.
22. PÉTER, Zs. (2010): *A turizmus térségi folyamatainak összefüggései, különös tekintettel az Észak-magyarországi régióra*. *(Relationship between the regional processes of tourism, with special regard to the Northern-Hungarian Region).* Miskolci Egyetem.
23. TASNÁDI, J. (2006): *A turizmus az Európai Unióban és Magyarországon. (Tourism in the European Union and in Hungary)*. Magyar Kereskedelmi és Iparkamara. Bp.
24. UN (2010): *International Recommendations for Tourism Statistics 2008*. N. Y.
25. *UNWTO (UN World Tourism Organisation) (1995): Technical manual: Collection of Tourism Expenditure Statistics*. N.Y.
26. UNWTO (2011): *Wold Tourism Barometer*. N.Y.
27. Viator Travel (2011): *The World's Top 50 Travel Destinations*. http://travelblog.viator.com/top-50-travel-destinations/ (letöltve: 2011. augusztus)
28. WIKIPEDIA: *Tourism*. http://en.wikipedia.org/wiki/Tourism (letöltve: 2011. 09. 15.)
29. WIKIPEDIA (2011/b): *Magyarországi turisztikai látnivalók listája*. *(List of the Hungarian touristic attractions).* http://hu.wikipedia.org/wiki/Magyarorsz%C3%A1gi_turisztikai_l%C3%A1tnival%C3%B3k_list%C3%A1ja (letöltve: 2011. augusztus)
30. TÖOSZ (Települési Önkormányzatok Országos Szövetsége) (2011): *Települések portálja. (Portal of Settlements).* http://www.mtportal.hu/digitalcity/map/entities/allEntities.jsp?dom=AAAAVKYC&prt=AAAAVKVQ&fmn=AAAAVKWA&men=AAAATRBN (letöltve: 2011. szeptember)

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FOR SOLUTION TO EVERY PROBLEM IS AT THE EDGE OF THE TONGUE

PRETOŽE RIEŠENIE KAŽDÉHO PROBLÉMU JE NA KONCI JAZYKA

Kristína URBANČÍKOVÁ

Abstract
In an increasingly competitive, dynamic and ambiguous business environment, communication is critically important to the success and, ultimately, to the survival of companies. Consequently, managers need to posses and constantly improve their communication skills. With regard to the given extent of the paper, it briefly introduces the general model of communication, the model of business communication and its basic features, the importance of a good communicator and finally its possible limitations. As the given article deals with oral (verbal) business communication, the study of written communication, body language and business internationalism is beyond the scope of the present paper.

Keywords: communication; business communication; communicator; limitations

Abstrakt
V konkurenčnom a dynamickom podnikateľskom prostredí je komunikácia veľmi dôležitá, pretože so sebou prináša úspech ako aj samotné prežitie spoločnosti. Z toho dôvodu manažéri musia ovládať a zároveň neustále zlepšovať svoje komunikačné zručnosti. S ohľadom na daný rozsah príspevku, článok stručne predstavuje všeobecný model komunikácie, model a základné črty obchodnej komunikácie, dôležitosť dobrého rečníka a v neposlednom rade aj bariéry v procese komunikácie. Predkladaný článok sa venuje verbálnej obchodnej komunikácii, písomná komunikácia, reč tela a interkultúrna obchodná komunikácia nie sú predmetom predkladaného článku.

Kľúčové slová: komunikácia, obchodná komunikácia, rečník, obmedzenia

Introduction

An American woman tourist was at the New York Customs. She was returning from Sri Lanka where she had gone on a short holiday. She was wearing a kaftan that she had picked up from the exotic island. The Customs Officer took her passport and withouth bothering to open it, asked her: "What´s your occupation?" The toursit hesitated for a moment. She was a housewife; she didn't know what to say. There was a time when a woman could cheerfully announce that she was a housewife but that was no more fashionable. After what appeared to be a brief struggle in her mind she answered: "None." The officer looked at her in disbelief and then started to rummage through her baggage. She had travelled a lot; never had she been subjected to such a thorough customes check at an American airport. The examination took more than half an hour, and

she missed her connecting flight. She was livid with anger. The officer found nothing objectionable. He returned her passport and indicated that she could go. She didn't say anything instead, she asked: "Officer!If you don't mind, I´d like to ask you a question. Why did you search my luggage so thoroughly? You´ve taken more than half an hour, and I´ve missed my connecting flight. Is it that you pick on people at random and give them hell?" "No, lady, but I couldn't believe your story that you were a nun."

This is a real incident the woman herself reported a few years ago in Reader´s Digest. The tourist and the officer heard each other very well. As both spoke American English as their mother tongue, there could not have been any linguistic difficulty with the simple question and answer that passed between them in English. Yet, the officer mistook her thoroughly. It caused both of them a lot of inconvenience. What prevented the officer from decoding the woman´s simple answer correctly? The answer lies in the way we communicate.

1. Communication

Oral or verbal communication is the interchange of verbal messages between senders and receivers. It is more immediate than written communication, it is also more natural and informal.

In human development, speech precedes writing. We first learn to speak, then much later, develop the ability to read and write. The ability to speak/articulate single words and later on speak groups of words in meaningful sequence comes to us in due course of our growth as a child. We develop this ability from listening to verbal sounds (words). As compared to written communication, therefore, our ability to communicate through the spoken word (speech) is an ability naturally developed in us (provided we are not deaf or dumb).

In human interaction, oral communication is used more than written communication.

The study of human behaviour shows that 70 percent of our waking life is spent communicating. Out of the total time spent in communicating, normally, 45 percent relates to listening, 30 percent to speaking, 16 percent to reading and 9 percent to writig. Thus, 75 percent of our time, we spend in listening and speaking. It is, therefore, necessary that people in business learn to use this time to their best advantage for creating and sustaining good relationship through their ability to listen and speak effectively.

In business, communication represents the main integrating ingredient. No business can grow and expand without proper communication channels. People maintain contact with each other only by communicating with each other. Entrepreneurs come to know with various people. Communication helps business to flourish.

Communication in business includes all contacts made both inside and outside the organization. However, to understand business communication, a brief overview of communication in general is needed.

1.1 General Model of Communication

There have been several attempts by scholars to explain the process of communication. One of the earliest definitions and models of communication came from the Greek philosopher – teacher Aristotle.

He claims that every speaker, regardless their working position or status, discovers rational (logos), emotional (pathos) and ethical (ethos) proofs, arranges them strategically, clothes the ideas in clear and compelling words and finally, delivers the product appropriately. Based on this fact, Aristotle´s model of communication comprises of four steps – invention, arrangement, style and delivery.

Having investigated Aristotle´s model, Kinneavy proposed a more ellaborated one. He claims the very first stage of communication in which rational, emotional and ethical proofs are integrated can be further divided – logos is inhered in the content or the message itself; pathos is inhered in the audience and ethos is inhered in the speaker.

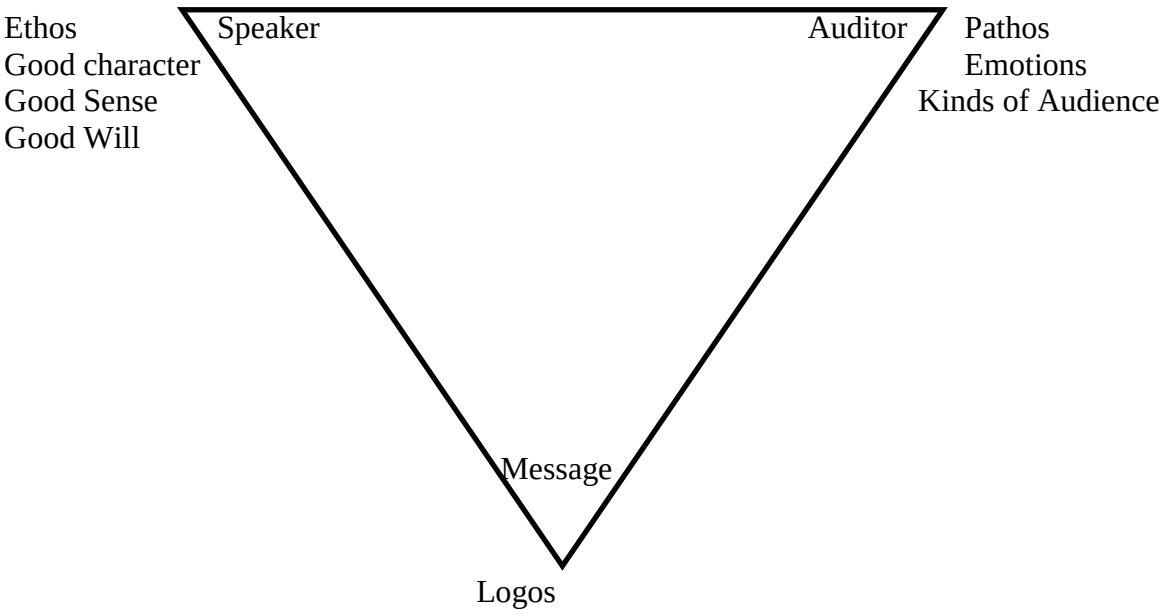

Figure 1
Aristotle´s Model of Communication and Kinneavy´s proofs

Further models of communication were based on the Aristotelian one, however, they are beyond the scope of the present paper.

1.2 Business Communication and its Features

Many management texts base the model of Business Communication on the one introduced by Shannon and Weaver in 1949 (in Hartley & Bruckmann, 2007). It is the so-called mathematical theory of communication originated from work on telecommunications systems. It aimed to show how information is transmitted from source to destination and to analyse what can affect the quality of the information during this process. The model then became very influential with researchers in human communication.

It includes the following main concepts:

1. *Codes* which represent a coherent set of symbols plus the rules needed to structure a message;for example, a language code consists essentially of a list of words, and a set of rules for preparing a text. These rules are the grammar or syntax of the language.
2. *Encoding* and *Decoding* whereas the first uses a code to structure a message in an effort to achieve the communicative objective and the second uses our knowledge of the code to work out the meaning of the message we have received.
3. *Mediumrepresenting* the physical system which carries the message from sender to receiver; it can vary from the air carrying the voice between two speakers to something like an email where the author is separated from the reader by complicated electronic processes.
4. *Noisebeing* a random input which distorts a message or which interferes with its transmission or reception. Noise may be external or internal. Examples of external noise are traffic noise making a conversation difficult or electrical interference of a telephone line. An example of internal noise is a temporary irritation which causes a communicator to lose concentration, such as feeling tired or having a headache.

Modern theories of communication explain it as a system consisting of two activities; i.e. speaking and listening and these two cannot be segregated. Both are closely intertwined and an overall impact is created if both these skills are used effectively.

Business communication is defined as the "process of transmission of information within the business environment" (Gopal, 2009). Business may include communication about short-term matters (needs and details that have to be sorted out and decided on immediately) as well as long-term matters (formulation of strategies and policy for the company).

Asha(2006) introduces the "IMPRESS" features of business communication where IMPRESS stands for an acronym which actually helps entrepreneurs to impress the other interactant – Idea, Message, Pause, Receiver, Empathy, Sender, and Security check.

I – IDEA. The first step in the process is to decide on the idea which needs to be communicated. There may be a host of ideas passing through the mind of the sender. Depending on the situation and the receiver, the speaker selects the idea best suited to the occasion.

M – MESSAGE. Once the idea has been selected, it needs to be clothed in a language that is comprehensible to the receiver. The encoding of the message has to be done keeping a number of factors in mind. What is it that needs to be stated? What is the language that is going to be understood by the receiver? Does the idea necessarily pertain to the interests of the receiver? What is it that the receiver actually needs to know? Framing of the message, if done (keeping answers to these questions in mind), would definitely make an impact on the receiver.

P – PAUSE. The significance of pauses cannot be underestimated. Pauses should be juxtaposed at just the right minute so that the receiver can assimilate the impact of the message. The use of pauses would be best understood in the context of a presentation. The presenter should, at the time of making a presentation, use this device suitably. Excessive usage of this device can lead the presentation into being one that is pretty boring and monotonous. The right use of pauses actually stimulates the audience. The impact is often so great and forceful that the receivers actually lean forward in their chairs when the presenter pauses, as if urging him to resume the presentation. This device, in the course of the interaction, lasts for barely a few seconds. However, the impact is long and meaningful.

R – RECEIVER. The receiver is the most important person in the process of communication who could also prove to be the most difficult. They are the one who are generally led into the interaction. In order to draw their attention, it is imperative that there be an extra plus that would retain their interest and make them attentive to the ensuing communication. To satisfy their criterion the senders should address themselves to the needs and expectations of the receiver. Formulating the statements according to a mutually accepted goal is a good way of proceeding and drawing the receiver´s attention.

E – EMPATHY. In communication empathy should be used to help us understand the other individual, the strategies that the person adopts and the responses given at a particular moment. It would be worthwile to note that all communication is situation bound. The same individual in two different situations might use the same words but the intention might be totally different. Gauging the exact meaning of an utterance can only be done when we literally put ourselves in the shoes of the other person and try to understand the situation from the perspective of the sender. Each individual has a logic bubble that

enables the person to formulate a message in a particular fashion. The same holds true for the receiver or the listener. The greater empathy between them, the higher the level of understanding and more the receptivity to messages and ideas. Empathy needs to be distinguished from another word, namely, sympathy, which is different in connotation. Sympathy is placing the sender on a higher pedestal and viewing the other in a sympathetic light.

S – SENDER. The communication process hinges on the sender who initiates the interaction and comes up with ideas and concepts that the one wishes to share with the receiver. The senders´ role is the most crucial. The success or failure of interaction depends on them and in the strategies they adopt to get their message across by securing the attention of the receiver. A cautious sender would understand that there is a difference between the mental frames of the interactants. Such a difference could be a result of discrepancy in interpretation of words, perception of reality, and attitudes, opinions and emotions. Message, if formulated, with awareness along these areas, is sure to bring success to the senders.

S – SECURITY CHECK. Effective communication necessitates that receivers listen carefully to the utterances of the sender so that the final results are positive. The primary rule is: "never be in a rush to commence communication." Sufficient time and effort should be put informulating the message. Suppose the senders wish to communicate five points. The sequensing and necessary substantiation of points with facts and figures should be done prior to the actual beginning of the communication process. This would build confidence in the message and eliminate possibility of errors in the statements.

1.3 The Communicator

The responsibility for making communication work lies primarily with the communicator. There are two important rules worth considering and dealing with.

The first rule is to never assume any kind of communication is simple. Most of the time entrepreneurs spend in their offices is taken up with communicating. Occasionally, we are not as precise as we might be; we muddle through and no great harm is done. Some communication breakdowns become out-and-out derailments. Often, where there is much hanging on it, communication must be exactly right and the penalties for not so doing range from minor disgruntlement to, at worst, major disruption to productivity, efficiency or quality of work.

The second rule says that everyone needs to take responsibility for their own communication, to tackle it in a sufficiently considered manner to make it work effectively, must take particular sense for all those whose job involves managing or liasing with people.

In simple terms, the communicator should:

- Consider the objective.
- Think about the interest level of the receiver.
- Be sincere.
- Use simple language, familiar words.
- Be brief and precise.
- Avoid vagueness and generalities.
- Give full facts.
- Assume nothing.
- Use polite words and tone.
- Cut out insulting message.
- Say something interesting and pleasing to the recipient.
- Allow time to respond.

If all the above mentioned rules are applied correctly, the whole message may have a positive effect which actually occurs after the message has been delivered. Literally speaking, what should get done, gets done. Such a clear communication and message delivery is able to prompt or speed up action, improve work efficiency, increase productivity and stimulate creativity.

Indeed it will act as a spur to whatever action is required. This may be an action; for instance, some management communication is in the nature of an instruction. On the other hand, it may also be designed for other purposes (it may inform, instruct, motivate, change opinion, prompt debate or discussion, stimulate the generation of ideas or build on prior contacts or thinking).

Finally, what a good communicator should never forget is the theory of four factors:

"*What about me*?"factor – any message is more likely to be listened to and accepted if the way how it affects people is spelt out. Whatever the effect, in whatever way, people want to know, "What is in it for me" and "How will it hurt me"; people are interested in both the potential positive and negative effects. Tell someone that you have a new computerized reporting system and they may well think the worst. Certainly, their reaction is unlikely to be simply "Good for you"; it is more likely to be, "Sounds like that will be complicated" or "Bet that will have teething troubles or take up more time." Tell them they are going to find it faster and easier to submit returns using the new system. Add that it is already drawing good reactions in another department, and you spell out the message and what the effects on them will be together, rather than leaving them wary or asking questions.

"*That´s logical*" factor – the sequence and structure of communication are very important. If people know what it is, understand why it was chosen and believe it will work for them, then they will pay more attention. Conversely, if it is unclear or illogical, then they worry about it, and this takes their mind off

listening. Information is remembered and used in an order – you only have to try saying your own telephone number as quickly backwards as you do forwards to demonstrate this – so your selection of a sensible order of communication will make sense to people, and, again, they will warm to the message. Using an appropriate sequence helps gain understanding and makes it easier for people to retain and use information. Telling people about this is called signposting – flagging in advance either the content or nature of what is coming next; one important form of this is describing a brief agenda for what follows.

"*I can relate to that*" factor – it is almost impossible not to allow related things to come into your mind as you take in a message. This fact about the way the human mind works must be allowed for and used to promote clear understanding. On the other hand, if you were asked to call to mind the house in which I live and yet describe it to you not at all, then this is impossible – at least unless you have been there or discussed the matter with me previously. All you can do is guess, wildly perhaps, that "All authors live in garrets" or "All authors are rich and live in mansions".

"*Again and Again*" factor – repetition is a fundamental help to grasping the point. Repetition is a fundamental help. It is true, but it does not imply just saying the same thing, in the same words, repeatedly. Repetition takes a number of forms: things repeated in different ways or at different stages of the same conversation, points made in more than one manner (e.g. being spoken and written down), using summaries or checklists to recap the key points, or a reminder over a period of time (maybe varying the method, phone, email, or meeting). This can be overdone, but it is also a genuinely valuable aid to getting the message across, especially when used with the other factors now mentioned. People really are more likely to retain what they take in more than once.

1.4 Limitations and Barriers of Business Communication

Oral communication demands the ability to think coherently as people speak, a word once uttered cannot be taken back. It is also hard to control voice pitch and tone, especially under stress, excitement or anger; moreover, it is very difficult to be conscious of the body language.

Probably the most important limitation and the biggest problem is language barrier, if talking about international business meetings. What entrepreneurs do not realize is the way insufficient language skills may inhibit the process of business communication.

Because of the obscrutiny of language there is always a possibility of wrong interpretation of messages. This semantic barrier is created because of the wrong choice of words, uncivil words, wrong sequence of sentences and frequent repetitions. In English, for instance, one word may have more than one connotation. The term "run" has more than a hundred meanings which may refer

to a verb, a noun or an adjective. After the listener draws a different meaning of a word than the speaker, a barrier arises.

Entrepreneurs receive much information from their subordinates and they translate them for the concerned employees according to their level of understanding. Hence the information is to be moulded according to the understanding of the receiver. If there is little carelessness in this process, the faulty translation can be a barrier in the communication.

It has been observed that sometimes a sender takes it for granted that receivers know some basic things and therefore, it is enough to tell them about the major subject matter. This point of view of the sender is correct to some extent with reference to the daily communication, but it is absolutely wrong in case of some special message which should be made absolutely clear otherwise there is a possibility of some wrong action in the absence of clarification.

Some people, like engineers for instance, do technical work. They have their separate technical language, therefore, their communication is not so simple as to be understood by everybody. Hence, technical language can be a barrier to communication. These groups include industrial engineers, product managers, quality controllers or laboratory technicians.

Nevertheless, these barriers may be easily eliminated. The very first step in any business communication is to define a goal in communicating. A good communicator must create a bridge of words that leads listeners from their current position to the communicator´s point.

After defining the needs, the communicator should launch the audience on their journey towards the intended destination. As they move on, the communicator is in the position of a guide providing the listeners with a map of territory they will cover.

The language used in the communication should be simple, understandable and of the level of the receiver. The best way to do this is to balance the general concepts with specific illustrations. At the beginning, overall ideas should be stated and then developed by using vivid, concrete examples. The most memorable words are the ones that create a picture in the receiver´s mind by describing colours, objects, scents, sounds and tastes. Specific details can also be very vivid.

Any information that does not directly contribute to the purpose of the communication should be eliminated. Many business messages contain too much information but most receivers do not need everything. All they need are a few pertinent facts, enough information to answer their questions or facilitate their decisions by eliminating unnecessary ideas.

By showing the audience how new ideas relate to familiar ones, communicators increase the likelihood that the message will be understood correctly. The meaning of the concept is clarified by the relationship to the old. Receivers already have a wealth of information on the subject; all they have to do is apply them to the new idea.

Emphasizing and reviewing the key points are the most important points of the message itself. It can be done either by words or by body language.

Surely, there are many more ways how to improve business communication, however, due to the extent of the paper, not all of them can be listed and described.

Conclusion

In the past several years, determining the effectiveness of communications activities has become increasingly important both to communication professional and to the greater business community. In 2004, the Communications Executive Council conducted a survey of hundreds of chief communication officers in major corporations; 79 percent of the respondents stated they believed communication performance measurement was more important than it had been three years earlier.

The given paper aimed at showing how important business communication is and what an important role it plays in achieving success. The article introduced the basic model of business communication based on the mathematical one proposed in 1949. The main features of business communication were illustrated by the IMPRESS model. The role of a communicator was mentioned in the next chapter which also included four factors which a good communicator should never forget. The last part of the article was devoted to the limitations and barriers of business communication.

References

1. Argenti, P. A. (2005) Measuring the Value of Communication. 22 June, 2012; Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=880782
2. Bargiela-Chappini, F. & Harris, S. J. (1997) Managing Language. The Discourse of Corporate Meetings. Amsterdam: John Benjamins Publishing Company
3. Carvalho, F. de O. &Sobral, F. (2003) The Importance of Communication Skills in Negotiation: An Empirical Study.23 June, 2012; 16th Annual IACM Conference Melbourne, Australia. Available at: http://ssrn.com/abstract=399824
4. Chaturvedi, P.D. & Chaturvedi M. (2009) Business Communication. Concepts, Cases and Applications. Delhi: Dorling Kindersley.
5. Communication Models. 23 June, 2012; Available at: http://marcelodevasconcellos.bo.lt/cy2i7#Aristotlesmodelofproof#BrownsHolographicModel1987
6. Forsyth, P. & Kaye, F. (2008) The Art of Successful Business Communication. London: The Institution of Engineering and Technology.
7. Gopal, N. (2008). Business Communication. New Age Publications.
8. Hartley, P. & Bruckmann, C.G. (2007) Business Communication. London: Routledge.
9. Kaul, A. (2006). Effective Business Communication. New Delhi: Prentice Hall of India Private Limited.

10. Kushal, S. J. & Ahuja, S. (2009) Business Communication. New Delhi: V.K. (India) Enterprises.
11. Monippally, M. M. (2001) Business Communication Strategies. New Delhi: Tata McGraw-Hill

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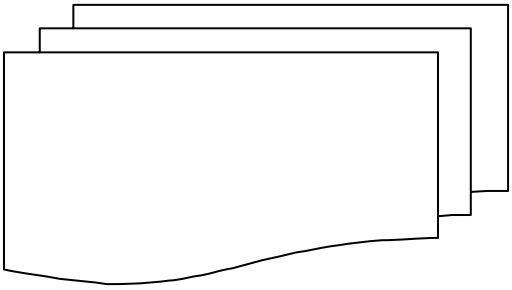

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ISSN 1337-6020