

International Journal of Management Cases

Special Issue:

New Trends in Management
and Economics in Poland

Iga Rudawska

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bdavies@glos.ac.uk

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PRODUCTION EDITOR

Gianpaolo Vignali
g.vignali@mmu.ac.uk

www.ijmc.org.uk

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Editorial

Special Edition: New Trends in Management and Economics in Poland

This special edition of International Journal of Management Cases presents collection of cases from Poland. They have been written by people who work, at the Faculty of Economics and Management, at the University of Szczecin (Poland).

The papers in this special issue of IJMC cover a broad spectrum. They are drawn from a range of different industries, but mainly address the economic and managerial trends emerging in Polish business. The collection of twelve cases involves healthcare, banking, retail, innovations, knowledge management and information technology. Their authors are themselves representative of the discipline of economy and management.

First two cases cover the methodological aspects of management. Iga Rudawska presents a methodology for measuring service quality and Ewa Krok builds a tool for measuring engagement directed on knowledge sharing. She also discusses activities which may contribute to an increase in engagement, both general and directed.

Next two cases report on the primary research studies conducted in the enterprises in Poland. They have been written from the managerial perspective. Aleksandra Rudawska and Alberto Lozano Platonoff examine relation between organizational learning capability and firm performance taking into consideration ten dimensions of learning capability on three learning levels. Next, Katarzyna Gadomska-Lila discusses the problem of organisational culture and its relevance to the existence of the company.

Next three cases refer the financial market in Poland. Agnieszka Perepeczo and Katarzyna Byrka-Kita use the event study methodology in order to evaluate post-acquisition performance, based on the market data, and Cumulative Average Abnormal Return. Agnieszka Majewska presents the growth of the swaps market in Poland, focusing on the example of it's utilization by one of Polish stock exchange companies. Next paper has been written from the perspective on behavioral finance. Sebastian Majewski explores the influence of

media news on process of market valuation of stocks on the Warsaw Stock Exchange.

Next two papers deal with customer relationship management. Edyta Rudawska identifies the sources of value for customers who use banking services in Poland and presents the theoretical background to the issues involved. Magdalena Kotnis presents the problem of the multidimensional customer segmentation and the incompletely database of customer behaviors and needs.

Last three cases report on the changes at innovation level that have been occurring both in the market environment, as well as in the Polish and European companies themselves. Magdalena Soboń discusses characteristic tendencies emerging in Polish e-commerce. She analyses quantitative and qualitative changes and trends based on observations. Katarzyna Koziol presents the results of the European Innovation Scoreboard – an instrument of the European Commission for the annual follow-up of the Lisbon strategy. Next, Lidia Kłós discusses the issue of the system of environmental management of rural areas in Poland. There are some statistical data provided.

I hope that the broad range of the topics which have been covered in this issue you will find beneficial and interesting. All of them include some questions so they can be used in the teaching process.



Guest editor:

IGA RUDAWSKA

DILEMMAS IN MEASURING THE QUALITY OF PROFESSIONAL SERVICES - EXAMPLE OF HEALTHCARE

IGA RUDAWSKA
UNIVERSITY OF SZCZECIN, POLAND

Abstract

This paper presents a methodology for measuring service quality. It aims mainly at:

(1) Investigating the conceptualization, operationalization and measurement of service quality,

(2) identifying the relationships between service quality, consumer satisfaction, and purchase intention.

In order to answer the above-stated inquiry the literature review has been made. It suggests that the current operationalization of service quality confounds satisfaction and attitude. Hence, the author discusses an alternative method of operationalizing perceived service quality, and the significance of the relationships between service quality, consumer satisfaction, and purchase intentions. The results point out that:

(1) a performance-based measure of service quality may be an improved means of measuring the service quality construct,

(2) consumer satisfaction has a significant impact on purchase intentions, and

(3) service quality is an antecedent of consumer satisfaction.

The paper refers professional services, but the special attention has been paid to healthcare services.

Keywords: service sector, service quality, perceptions of quality, SERVPERF, SERVQUAL, Poland

Quality – conceptual background

The American Institute of Medicine interprets the quality of medical care as “[...] the extent to which health services given to individuals and populations increase the probability of receiving a positive medicinal effect are in conformity with the present-day professional knowledge” (Włodarczyk, 1996, p 307). In this definition, the authors stress the result of service process and treat the quality as a consequence of the aggregation of partial activities given at a high level. On the other hand, J. Palmers describes the quality in a dynamic manner as a production of improved medical services, which is determined by exogenous conditions, owned technology, human resources, etc. (Mlekodaj, 1996, p 6). Both interpretations ignore the subjective aspect of quality which is quantified in the category of customer (here: patient) expectations and judgments. This is because he/she purchases not a product sensu stricte but a resolution of a specific health problem. With this opinion corresponds also the definition of object's quality (which refers to services as well) proposed by the International Standards Organisation in its standard ISO 8402. According to it, the quality of service (here: medical service) is the whole properties of service that is connected with its ability to satisfy the stated and expected needs of consumer (Łańcucki, 2000, p 32).

The difference between the expected service and the one actually received is an individual and subjective matter for every customer. In this connection, it can not be objectively measured. Only technical quality, being a result of the process of service provision from a purely instrumental, clinical point of view, can be subjected to such a measurement. Correct diagnosis, therapy consistent with the present-day medical knowledge, faultless performance of operation – all these elements

determine the technical quality. Individualisation of the perception of medical service quality as well as strong subjectivism in the evaluation of services from the side of patient make using the notion of perceived service quality to be more adequate. This term is used to define the result of comparative evaluation of two elements: the experienced service and the expectations planned in relation to it.

Objectification of quality measurement

Outpatient or inpatient purchases not a product *sensu stricte* but a resolution of a specific health problem. His/her satisfaction depends on the extent to which the received service satisfies his/her expectations. The result of comparative evaluation of those expectations with the reality is defined as the perceived service quality (Parasuraman et. al., 1985, p 41-50). The difference between the expected service and the one actually received is an individual and subjective matter for every customer. In this connection, it can not be objectively measured. Only technical quality, being a result of the process of service provision from a purely instrumental, clinical point of view, can be subjected to such an evaluation (Zifko-Baliga, Krampf, 1997, p 2). An attempt to determine the extent of realisation of the assumed objectives is standards. In the health care systems of highly-developed countries they even say about the expansion of so called normative quality based solely on standards. The genesis of that phenomenon should be sought in progressing supremacy of biotechnology and computerisation of local health care sectors. The example standards are: maximum x minutes of the waiting time for an emergency ambulance service action, average waiting time for laboratory test results below x minutes, or maximum waiting time for delivering bills to the payer of x weeks. Standards are most frequently internal measures within a given health care institution. They can be formed not only in a statistical view but also in a dynamic one (for example, reduction of waiting time by 10%; decrease in the number of complaints by 30%). This method allows for considering individual conditions of organisation but it makes external comparison with other entities impossible. In this connection, when performing the comparative analysis, criteria being the parameters that are statistically measurable and common for all institutions of a specific type are taken into consideration. An example of this

can be: percentage of postoperative complications or percentage of hospital-acquired infections. The evaluation with the above-mentioned criteria is carried out by an internal control section, or by accrediting organisations or externally controlling ones.

The care for the quality of medical services is expressed not only in establishing its existing state or permanent detection of differences between the desired quality and that actually realised. It also involves the analysis of reasons for the observed deviations as well as the implementation of necessary corrective and enhancing actions. This means in practice respecting of a quality assurance system. Since 1987, International Standards Organisation (ISO) has been preparing standards for documenting the reliability of quality system in service institutions. Unfortunately, the application scope of these standards in medical services is limited. This results first of all from difficulties in interpretation of particular clauses of the standard. A practical illustration of quality assurance system implementation is so called quality circles. The idea, the birthplace of which is Japan, consists in systematic meetings of the team of co-workers in order to discuss a specific problem and work out its resolution, followed by its presentation to decision-makers (Kocher, 1994, p 40).

Subjectification of quality measurement

Measuring the quality of medical services requires definitely more than subjecting their technical aspects to evaluation (e.g. degree of technological advancement, provision of hospital with beds). A matter of great importance is the acceptance of service by customer. This whether the service will be evaluated by him/her as a qualitatively high one depends on the way in which the technical quality has been delivered to him/her (so called functional quality). The starting point of this analysis is evaluation of the customer's satisfaction from the experienced service. Methods of measuring its level as well as of the perceived quality correlated with it commonly applied in the sector of consumption services can be also used in medical services. Some of them can be applied without restrains, while other ones require appropriate adaptation, arousing at the same time controversies among the scholars who examine this problem. Dilemmas, which are presented below, are connected for the most part with imperfections of the instrumental apparatus.

One of the methods is critical incident technique (CIT). In personal interview, by means of open, direct questions, clients are asked to name all those incidents in contacts with the contractor, which have been particularly negative and positive (Bitner et. al., 1990, p 73). This is the interactions that are best remembered and precisely described. Most frequently, clients refer to difficulties that appear in interpersonal contacts, which causes that global evaluation of a service entity is burdened with a large emotional load. Additional peculiarity, deepening the subjectivity of quality assessment, is the information asymmetry that exists between the contractor (physician) and the client (patient). In this connection, the evaluation of service quality is in a way a gauge for measuring the degree of confidence in the contractor, trust to his opinions and recognition of his authority. This is because the patient chooses *ex ante* a specific physician, not a medical institution which is not known to him closer.

An alternative method of measurement is remarks sheets. The filled in questionnaires as well as non-structuralised comments expressed in writing can be thrown by customers for example into boxes placed in the waiting room. Another method is so called telephone hotlines which give a direct contact with a person representing the organisation and enable a quick response. Both methods require the activity on the side of customer, which frequently fails in practice. This is because many patients will rather cease to use the service in case of discontent, or will take advantage of the competition's offer, than take up an intervention (lodge a complaint or make a written comment). In connection with the above, it is difficult to establish a real correlation between the observed effects and the level of satisfaction of all customers. Better results can be obtained when service provider is the party that initiates contact. Postal or telephone questionnaires, addressed to a representative group of respondents, can serve as a research tool. Some medical institutions establish also a position of spokesman who is responsible for arranging regular meetings with customers. During them are discussed the wishes of patients as well as their praises and complaints. Initiatives of that type are worthy of implementation, in particular that, as proved by research, there are significant differences between the factual expectations of patients and the assumptions of professionals

with regard to these expectations (Hahden, 1997, p 18).

SERVQUAL method

A method commonly applied on the market of consumption services is SERVQUAL (service quality). Its authors (Zeithaml, Parasuraman and Berry, referred hereinafter to as ZPB) distinguished five determinants of the quality perceived by customer: reliability, responsibility, assurance, empathy and tangibility. Research questionnaire refers to two dimensions. The first of them is a declaration of customer that relates to his/her expectations with respect to a given service expressed in a 7- or 5-point Likert scale, whereas the second one is a perception of service accomplishment level. Difference between the desired state and the actually experienced one in the opinion of customer is the quality of service perceived by him/her (hence, a synonymous name of this method is GAP ANALYSIS). SERVQUAL method raises many well-founded critical opinions. In the first place, difficulties are presented by the arithmetic measurement of difference of the specified dimensions, which is caused by non-quantificability of some determinants, for example aesthetics, pleasure or pain. Secondly, the cognitive value of method depends on interpretation of the notion – expectations towards the service – in the model. ZPB define it in the category of service provider obligations, not assumptions (Teas, 1993, 19). Expectations are not thus the customer's prediction but represent a certain perfect pattern of the action of service provider. This model presents a specific comparison with the standard. Mathematically, it looks as follows (Teas, 1993, p 19):

$$(1) \text{SQ}_i = \sum_{j=1}^k W_j (P_{ij} - E_{ij})$$

where:

SQ_i - SERVQUAL overall perceived quality of stimulus i

k - the number of attributes,

W_j - a weighting factor is attributes have differentiated weights,

P_{ij} - performance perception of stimulus i with respect to attribute j ,

E_{ij} - service quality expectation for attribute j that is the relevant norm for stimulus i .

The above equation suggests that the perceived quality of service (SQ_i) increases as differences between P_{ij} and E_{ij} grow. Thus, the maximum estimate of the perceived quality is when expectations are scored as +1 (in a 7-point Likert scale) and perception as +7 (7-1= +6). On the other hand, the lowest estimate is in case when E_{ij} is +7 and P_{ij} +1 (1-7= -6). It results from this interpretation that shifting of the score from -6 to +6 reflects the growing level of perceived service quality.

Another interpretation of the notion perfect pattern in SERVQUAL method presents it as an attainable level of action in the face of perfect conditions. The SERVQUAL model in this case is as follows (Teas, 1993, p 20):

$$(2) \quad SQ_i = P_i - E_i$$

where:

SQ_i - the SERVQUAL measure of the individual's overall perceived quality of stimulus i ,

P_i - the individual's perceptions of the performance of stimulus i with respect to the single attribute

E_i - the individual's quality expectation norm for the single attribute – conceptualized as a feasible ideal point

With such an interpretation, a prerequisite about the increase of perceived service quality in the

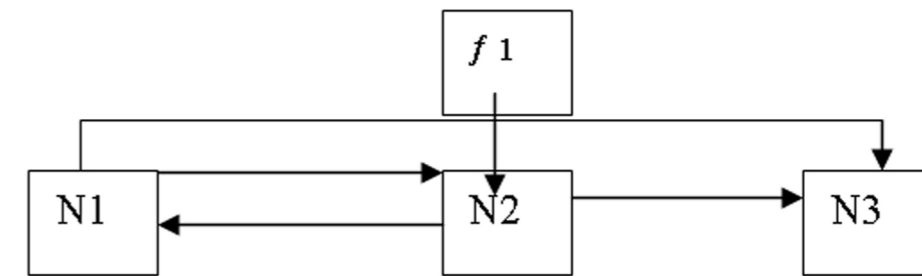
manner described above should be questioned. Otherwise, this would mean that it is possible to surpass the assumed perfect standard. In view of the above, the perceived quality (SQ_i) is a positive linear function of perception (P_i) with constant E_i or a negative linear function of expectations (E_i) with constant P_i .

Furthermore, one should question generalisation of the paradigm of satisfaction with the perceived quality of service introduced by ZPB. Satisfaction can be described as an ephemeral phenomenon, as an evaluation made by customer based on his/her individual contacts with the service. It reflects mainly emotional (affective) elements of customer response. Only the sum of partial satisfactions along with previous experiences contributes to the perceived quality of service. It has a form of long-term attitude which has resulted from specific repeatability of the performance level. At the same time, it also takes into account the elements of rational evaluation (Cronin & Taylor, 1994, p 126; Hennig-Thurau & Klee, 1997, p 742).

SERVPERF method

An alternative method for SERVQUAL for evaluating the perceived quality of services is SERVPERF (service performance) authored by J. Cronin and Jr. and S. Taylor (1992, p 55-69). The key issue, subjected to the analysis according to a 7-point Likert scale, is the performance of service. The authors focus on process features and service product result, while ignoring customer ideas (expectations). The structural model of SERVPERF, apart from customer satisfaction, also takes into account service purchase intentions (Figure 1).

Figure1. The structural model SERVPERF



where:

f_1 – SERVPERF, N_1 – consumer satisfaction, N_2 – overall service quality, N_3 – purchase interactions

Source: (Cronin, Taylor, 1992)

Table 1. The perceived quality of health care in hospital

Components of perceived service quality	Descriptors
Evaluation of infrastructure (potential)	facilities (parking place, board, entertainment), reception and payment procedures
Evaluation of physician (process)	professional experience, respect for patient higher-order needs (safety, confidence, deference), interactive communication, image, ethics of behaviour
Evaluation of nursing personnel (process)	interactive care, efficiency of action, individualised attitude to patient
Evaluation of ancillary personnel (process)	heartiness, kindness, professional competence
Evaluation of medicinal effect (result)	physical and mental health state

Source: own elaboration based on (Zifko-Baliga, Krampf, 1997)

In the method described, an assumption should be made that satisfaction of customer is a primary phenomenon in relation to the perceived quality and that it, as well as the perceived quality, significantly affects customer intentions to purchase a service.

Reference literature does not opt clearly for the superiority of one the described methods. Nevertheless, while intending to adapt any of them in the sphere of medical services, one should verify the evaluation criteria applied in them. For example, in the questionnaire research carried out in 1993 by Institute for Quality Centre in Huston (Ohio, USA) descriptors presented in Table 1 were used in the evaluation of service quality. In the experiment participated 529 patients, being a

representative group of the examined population, and a 5-point Likert scale was used.

The evaluation of service quality of an exemplary hospital presented above takes into account three service components: potential, process and result. Worthy attention is the role of human factor in overall evaluation of the perceived service quality.

Conclusion

Concluding these deliberations, it is possible to state that application of the professional service quality measurement methods per analogiam to other services should be avoided. This is because each of them is a singular and differently

composed phenomenon. These differences should be taken into consideration when choosing research instruments. Last but not least, a supreme prerequisite of the programmes for quality evaluation is improvement of the care of patient/customer. From a strictly economic point of reference, the qualitative improvement of service leads to an increase in efficiency and effectiveness of service provider management. This is because the quality of health service is determined not by a large number of physicians but by a small number of patients. Well, this was just Plato who said (Kocher, 1994, p 40): that "a characteristic of bad city is the number of its hospitals".

Questions

1. How can you define quality in service settings?
2. What are pros and cons of Servqual method?
3. What are the difference between Servqual and Servperf method?
4. Give some examples of quality measures in professional services.

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PERSONAL ENGAGEMENT IN KNOWLEDGE SHARING

EWA KROK
UNIVERSITY OF SZCZECIN, POLAND

Abstract

In connection with the development of the information society and the growing importance of the intellectual capital researchers indicate the concept of knowledge management, which is gaining large interest of practitioners at present. The attention was focused on one of its areas, namely on knowledge sharing, a key process for creating cooperatively organizational knowledge.

The purpose of the paper is to propose a procedure which enables one to achieve increasingly better results in this area. It consists in identifying factors which influence personal inclination to knowledge sharing, diagnosing the present state and undertaking actions which aim at raising personal engagement in the knowledge exchange process.

The author indicated an instrument to be used for evaluation of the general level of personal engagement, presented a tool for measuring engagement directed on knowledge sharing and discussed activities and tools which may contribute to an increase in engagement, both general and directed.

The manner of the suggested approach varies slightly from the traditional analysis of barriers in knowledge sharing in an organization. The structure of a research tool enables one not only to obtain an individual evaluation of employees as regards knowledge sharing, but also to recognize the motives inducing them, or likely to induce them, to knowledge exchange. The proposal of activities aiming at increasing the employees' readiness to share their knowledge was made from the perspective of building engagement.

The article evidences a close connection of the effectiveness of activities in the area of knowledge sharing, within the framework of the idea of the management of the knowledge, with the implementation of programs to build the general and directed personal engagement.

Keywords: knowledge management, knowledge sharing, personal engagement, personal engagement in knowledge sharing, Poland

Introduction

The period of great transformations happening in the world, forming the information society, is connected first of all with the process of gradual globalization. The great role which accelerates this process is played by the technological progress within the electronic media, which allows a free flow of information and technology, leading to bringing different places of the globe closer to one another enormously, as well as creating a global economic, financial and social community.

An effect of the changes is a decided increase in the importance of knowledge among the key elements which determine the competitiveness of enterprises and economies as wholes. The participants of the European e-debate (European E debate, 2004), on the knowledge-based economy, indicate a limitation in the meaning of natural resources and low skilled labour force as well as a simultaneous rise in the role of the human capital. The existing production factors then, such as land, labour and capital, lose their principal meaning in the interest of invisible assets. It is the knowledge that makes the organization's resources enable an enterprise to create a value and compete with other enterprises in the global market. The economic and productive power of enterprises at present is in the intellectual and service abilities. Managing a 'knowledge-derived' intellect becomes the most important management skill.

Consequently, one of the prevailing concepts nowadays, gaining an increasingly bigger interest among managers, is knowledge management. The implementation of this idea concerns an activity in the areas which can be named as: identification of knowledge sources, gaining and creating knowledge, knowledge sharing, its popularization,

collection, storage and search for knowledge as well as using and updating it.

The nature of knowledge, its close connection with the human mind, complicates the administration of quantitative analyses and, consequently, it results in huge difficulties in evaluating not only the value of the final results, but also the efficiency of the activities realized within knowledge management.

The present article focuses the reader's attention on the area of knowledge sharing: on the diagnosis of the present state and the opportunities of its improvement.

Knowledge sharing

Knowledge sharing is a mutual transfer, i.e. knowledge exchange, understood as a total of the information, abilities, skills and experiences, essential from the organizational point of view. The aim of the knowledge sharing process is a transformation of an individual knowledge of each participant of the process into the organizational knowledge .

Knowledge sharing exerts influence on the extension of the learning process on bigger groups of people, which supports creating new knowledge and accelerates the process of transforming the knowledge into activity. Knowledge management does not mean possessing it, but, first of all, using it. According to Peter Drucker (Grudzewski, 2004, p. 521) "making the knowledge a productive one", i.e. the effects in the form of transforming the knowledge into real activities, are an essence of knowledge management.

The importance of knowledge sharing for the effectiveness of the whole knowledge management process and for the efficiency of the organization's performance is increasingly frequently perceived by managers and the highest management.

The readers can often encounter one of Lion Platta's sayings - the president of Hewlett Packard syndicate: "If HP knew what HP knows, the profits would be three times bigger" (Kozarkiewicz-Chlebowska, 2001), which clearly defined the challenges which are ahead of a company within

the range of activities supporting innovativeness and knowledge sharing.

In the well-known British pharmaceutical syndicate Glaxo SmithKline, an essential initiative associated with realization of the concept of knowledge management was implementing a program of Best Practice Sharing and consistent conducting internal and external benchmarking (GSK's Corporate Responsibility Report, 2005).

In British Petroleum, the important moments for the practical realization of the concept of knowledge management included implementation of an initiative improving the experience and ideas exchange as well as facilitating the communication among the company employees with its partners (Browne, 1997). That undertaking was realized through working in virtual teams, hence the name Virtual Teamwork.

It is also indicated (Zalewski, 2008) that in technical professions the organizational culture directed on knowledge sharing clearly raises the effectiveness of the realized projects.

What can organizations do so that the activities undertaken in this area will be the most accurate and bring desirable results?

In this article the author suggested looking at the problem through the prism of building and increasing personal engagement. It was noted that there is a relationship between the intensity of the knowledge exchange process and personal engagement. The general level of personal engagement was indicated as a determinant of inclinations to knowledge exchange. As a result of further analyses one recognized other factors influencing the readiness of employees to knowledge sharing. One proposed a questionnaire inquiry, which enables gathering information concerning the perception of the process of knowledge sharing by employees of the organization and obtaining individual hierarchies of motives inducing them to knowledge exchange. The performed diagnosis will enable one to formulate some guidelines and determine the directions of activities which contribute to increasing personal engagement in knowledge sharing and consequently, to better realization of the concept of knowledge management.

Table 1. Basic categories and factors of engagement

People	Manifestation (first of all by the management personnel and superiors) of values essential for the company Attention, concern and time devoted to the employee Causing the employees to realize the objective of the engagement and the advantages resulting from that objective Acknowledgement and appreciation of efforts put into performing work Proper relationships and human relations
Work	Clearly defined aims Awareness of the responsibility for particular tasks Possibility to make decisions within the performed work Possibility to influence on the decisions undertaken in the company Work full of challenges
Development	Opportunities to gain new skills and improve the existing ones Perspectives of professional development Promotion prospects Using the possessed potential
Bonuses	Clear and transparent rewarding systems perspectives of raising one's reward immaterial benefits social packs bonuses, prizes
Organizational culture	Suitable selection of methods, techniques and styles of management Communication openness Orientation in support of an employee Ethical and moral conduct Coherent system of norms and values Low level of bureaucracy in activities
Life quality	Friendly working environment Access to appropriate resources Functional and modern working tools Harmony of personal and professional life Terms of leaves and holidays

Source: The author's own preparation

Personal engagement in knowledge sharing

The notion of personal engagement in the management theory has been already known for some time and is defined (Rostek, 2006) as "an indispensable resource for transforming personal potential into business results. The engagement has its own source in an employee's positive attitude towards his or her company and superiors, in his or her perception of his or her own development opportunities adequately to his or her individual expectations". W. Kurda (Kurda, 2004, p. 12) defines engagement as „an inclination to make a voluntary effort by an employee when nobody commands him or her and nobody watches him or her". The elements which exert a significant influence on the level of personal engagement, are divided into several groups and were listed in Table 1.

Personal engagement in knowledge sharing was defined here as the level of their inclinations, i.e., their readiness to transfer their own knowledge to other employees, for the welfare of the organization.

Thus personal engagement in knowledge sharing can be regarded as a so-called directed engagement, i.e., requiring additional specification of the area in which it is to manifest.

Hence the level of personal engagement in knowledge sharing will be influenced by a general level of personal engagement and additional elements, characteristic of the area of knowledge sharing, which are frequently derived from the factors determining the general engagement.

The level of personal inclinations for knowledge sharing is determined by various factors, dependent on both an individual, an organization and the knowledge itself. Understanding of the particular elements is also different.

Based on the analysis of the literature on the subject and based on the conversations with experts on knowledge management (both researchers and practitioners), the following factors were distinguished, determining the level of the personal inclination to knowledge sharing (Table 2).

On the basis of the developed list of factors a questionnaire was prepared which can be applied in identification of factors determining a particular level of particular personal engagement in knowledge sharing (Table 3).

The research will provide subjective information, so the information resulting from of the employee's individual evaluation (personal feeling/reception), concerning the values of the investigated factors.

In order that the replies are sincere individual judgments and opinions, it is necessary to ensure the respondents the sense of anonymity. So, it is not recommended to use the developed questionnaire in any direct interviews with employees.

In view of the nature of the investigated object, an attempt to evaluate is more probable than any exact measurement, hence the qualitative scales applied in the questionnaire.

The more points an employee will obtain in question 3 of the questionnaire, the higher level of his or her engagement can be expected. Question 4 aims at obtaining information on the popularity of using particular forms of communication and knowledge exchange. The replies to question 5 provide plenty of precious information on employees' individual feelings in relation to the frequencies of the occurrence of the knowledge exchange process. The results of question 6 can underlie the construction of motivational systems encouraging to knowledge sharing. The employer obtains the information on the employee's priorities, on what is important for him or her in knowledge exchange. The replies to question 7 provide information on the need to motivate an employee to knowledge sharing. The subjective evaluation of the employee's own level of his or her engagement in knowledge exchange (question 8) provides employers with manageable information about the engagement potential as well as opportunities to increase it. It can also determine an output data for a pattern for formulating the decision rules which concern an assignment of a definite inclination to knowledge sharing to various classes containing factors which influence this inclination .

Table 2. Factors of engagement in knowledge sharing

Factors of engagement in knowledge sharing:	
dependent on the employee:	dependent on the organization and/or collaborators:
sex	organization size
age	forms, manners and the power of - material appreciation - extramaterial appreciation
education	return
<i>general level of engagement</i>	quality of the communication system
seniority	the atmosphere, the working environment (competition between employees and/or with departments)
position	teamwork support
qualities such as: optimism, self-confidence, high self-estimation, altruism	ensuring the time and creating opportunities to transfer knowledge
awareness of the need of knowledge sharing	organizational structure
occurrence and gradation of motives of knowledge sharing (return - relative advantage, altruism, increase in reputation, social norms)	"an example from the management", from the management personnel and the higher rank management
	procedures facilitating / obstructing knowledge sharing
dependent on knowledge:	dependent on employees and knowledge:
knowledge type (determining the possibilities and the time of sharing it)	costs and duration of knowledge acquisition

Source: The author's own preparation

Questions 1, 2, 9 and the personal data aim at determining whether there is a relationship between an inclination to knowledge sharing and the occupied position, seniority, sex, age, marital status, having children and one's character and personal qualities.

Various hypotheses can be presented here, for example, a hypothesis that a self-confident employee will have less reluctance and will manifest greater readiness to knowledge sharing than a shy person, or for instance, a hypothesis that an employee who in his or her personal life has to answer thousands of questions from his or her own adolescent children on an everyday basis, will have an automatically greater inclination to knowledge sharing in his or her workplace than a single person.

Thus, the questionnaire will obtain information on subjective perception of the organization by its employees, i.e. its practices and activities, in the

context of knowledge sharing. The interviewees will also indicate the importance of particular stimuli which induce them, or in their opinion they would be able to induce, if they were applied by the organization, to knowledge exchange. Listing the results will allow one to diagnose the level of engagement manifested by the employees.

Owing to the fact that one of the separated factors determining the employee's inclination to knowledge sharing, is the general level of the employee's engagement, the research ought to be supplemented with its definition and specification. In order to achieve this, one can use a validated questionnaire for the research in the general level of personal engagement, which is used by Hewitt Associates. Based on a checked methodology, this company has been conducting research since the beginning of 1990s. At present they are embracing organizations in different countries in Europe, Asia, Australia and New Zealand, in Canada and

Latin America. In Poland the research has been conducted since 2006. In all the three editions effected in Poland, 44119 employees from over 190 organizations have been examined. The results of the research are available on the Hewitt Associates website .

The evaluation of the engagement level can also be performed by means of a tool developed by the Gallup Institute. As result of a pioneer study in the form of thousands interviews conducted in different types of organizations in many countries, the Gallup Institute identified 12 elements, the so-called Gallup Q12, determining the engagement level (Thackray, 2001).

The evaluation of the personal engagement level (general and directed) will enable one to choose activities which aim at increasing this level more precisely.

In the following section the reader's attention was drawn to the most important organizational tasks within the building engagements process and the engagement directed on knowledge sharing - which simply mean creating an opportunity

and encouraging the organization members to exchange knowledge.

Building personal engagement

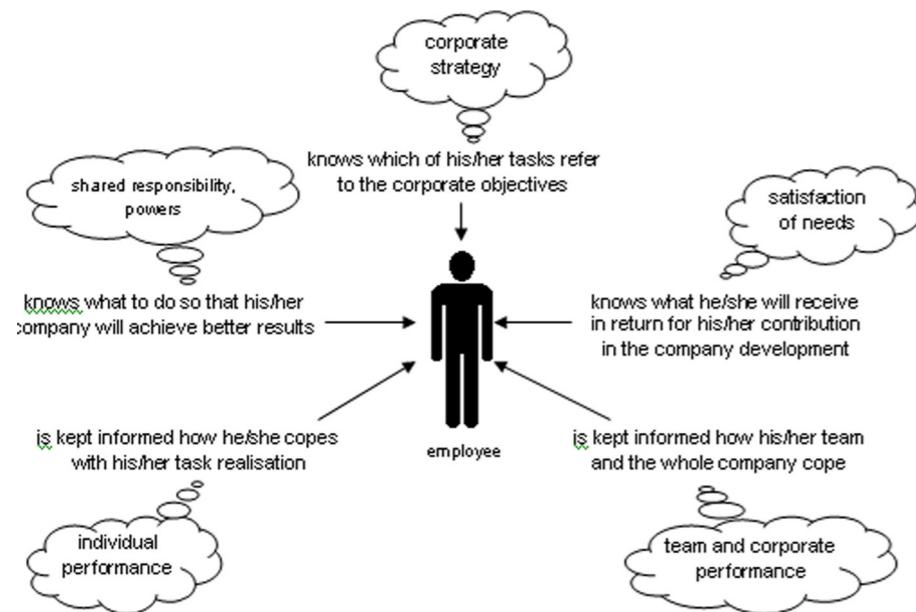
Increasing the general engagement level

The activities supportable to raising the general level of personal engagement include: working on the model of internal communication and on formation of the character of the superior-subordinate relation, creating and using motivational systems as well as the talent management.

Communication

What is very essential for building personal engagement is the communication with them, which is one of the primary components of the organizational culture. The basis of every communication strategy can be determined by the following model (Figure 1):

Figure 1. Information delivered to an employee, underlying the communication strategy



Source: The author's own preparation

The employee receiving the above information set knows his or her place in the company and at the same time feels important for the company. What is very essential here is the immediacy and the return of communication. These elements can assure „face to face” communication with the immediate superiors in a considerably wider degree than formal means of communication such as intranet, or a company newsletter.

Motivational systems

The following significant activity which may influence the engagement is building and practising suitable motivational systems. These are systems encouraging employees to act in a specific way, eliminating at the same time any undesirable behaviour from the enterprise's point of view. Their assumption is to care for the best possible utilization of the limited organization resources, i.e. finance, personnel, working tools, etc. Their essence is to allow people to achieve whatever they really want, in return for performing their work.

Human motivation is not constant, the system task is to increase it and maintain it on an adequately high level.

Motivational systems should be consistent with the company's strategy, its organizational culture and values. Moreover, no system will act without full support on the part of the corporate management. In other words, it will not be possible to motivate the staff without participation of members of the board and management.

It is advisable to perform an individual identification of factors which build engagement. It allows one to divide the employees into groups of relatively homogeneous needs, which further provides opportunities to adapt all activities to the employees' expectations more precisely .

Clear and simple rules of the motivational system are essential. Its implementation ought to be preceded with an analysis of the current situation as regards catching and removing any “demotivators”.

The details concerning the complex issues of the employees' motivation formation process and the phenomena threatening the efficiency of motivational systems were pointed out by (Kobjoll, 2004; O'Reilly, 2006; Pietron - Pyszczek, 2007 and many others).

Talent management

The employees claim that they do not feel engaged in their own work, and 1 even has an negative attitude towards it. It can result this from the fact that, as shown by further research, managers focus far more on working to eliminate the employees' weak aspects than on developing and using their assets (Table 4).

Considerably more often than about the strong aspects (25%), superiors speak with their subordinates about their imperfections (40%). However, as much as 35% employees reported that their superiors never speak with them either about their abilities or weaknesses at all (Buckingham, 2007). And one's self-development based on one's weaknesses leads only to frustration whereas when based on talents it gives satisfaction (Sosinska, 2007). The following significant activity then, contributing to building the engagement, can be working on the employees' strong aspects, i.e., talent management (Borkowska, 2005; Sosinska, 2007; Hagel III, 2006).

The increase of engagement in knowledge sharing

The efficiency of building an oriented engagement directed into the area of knowledge sharing depends on an ability to build general engagement and on the knowledge of factors determining each employee's inclination to knowledge exchange. These are circumstances facilitating more precise selection and use of techniques supporting and motivating employees to desirable activities.

Regardless of any individual results of research in a given organization, the level of knowledge sharing will grow as the employees' inhibitory barriers are eliminated before their own knowledge is revealed and together with the organization's progress in implementation of methods and tools which facilitate the knowledge transfer process.

So, increasing the engagement in knowledge sharing and knowledge transfer will be supported by the knowledge-based organization model, i. e., an organization characterized by supporting team work and team learning, full informational openness as regards activities and performance, orientation on a steady development and training employees as well as the organization members' active participation in building the vision of its future.

Encouraging employees to knowledge sharing and popularizing can occur via teamwork support, common problem solving, arranging informal meetings in order to exchange knowledge and experiences, facilitating the establishment of new contacts, permanent practical and theoretical support, assistance in the form of coaching, ensuring participation in scientific conferences, seminars, workshops, consultations, enabling access to specialists and experts, ensuring permanent access to current information, conducting research and development and using a participational management.

Instruments which support knowledge sharing, knowledge popularization and knowledge development in an organization are first of all methods based on a properly organized communication, such as (Mikula, 2007): different forms of debates, knowledge groups and teams, common interest group, practitioners' communities, the open space technology, Quality Audit Meeting, quality clubs, the "yeast fermentation" concept, the internal personal marketing method or brainstorming. The knowledge and experience exchange is also supported by using best practices, benchmarking and reference to the ideas of Kaizen's philosophy.

What is essential from the point of view of increasing the engagement in knowledge exchange (and using it at the same time) is also managers' activities, consisting in perceiving, appreciating and rewarding knowledge sharing. Those employees who are willing to share their knowledge can be offered first of all specific opportunities to improve their own professional qualifications, according to an individually designed development path. A significant motivational stimulus can also be provided by emphasizing the affirmative attitude of such employees and praising them in the presence of the remaining company members. Some good effects can be achieved by a material and immaterial incentive system, used in a practical, studied, consistent and transparent manner for the whole crew. It seems highly advisable to promote, motivate and reward both those people who provide knowledge and those people who use it. It is so because knowledge sharing is not only a knowledge supply, but also a knowledge demand (Fazlagic, 2001).

The increase in the engagement in knowledge sharing, its popularization and using it can also be

supported by using and distributing the so-called "popularity rankings" among the employees, obtained thanks to the information technology system of supporting knowledge management, as e.g.:

- website ranking - presenting the hierarchy of websites which include the knowledge, according to the number of displays of a given website
- file ranking - building hierarchies of files according to the number of downloads
- thematic ranking - based e.g. on key words, providing a hierarchy of problems which are searched for in the system the most often
- expert ranking - in the knowledge which is most often used by the users
- user ranking - ranking of people using the system the most often.

Conclusions

Attaining a high level of personal engagement is at present one of the most important challenges of HR departments, a task in itself, and not an secondary effect of various activities. The engaged employees are a resource which is indispensable for the realization of any plans.

Many studies conducted, among others, by Towers Perrin - ISR, Hewitt Associates and Gallup Organization, reveal a correlation between the personal engagement and the company economic performance. The organizations in which the personal engagement is on a high level achieve a better financial performance and are more directed on the customer. The lack of personnel engagement means a lowered efficiency, the effect of which are losses and additional costs, resulting mainly from the absence and fluctuation.

In the publication the author focused on the oriented engagement. Increasing the level of the personal engagement in knowledge sharing was put forward as a proposal of one of the manners to increase the effectiveness of activities within the framework of the knowledge management concept. The concept plays a significant role in achieving a permanent competitive superiority of

the organization in the now forming knowledge-oriented information society.

Raising the level of the personal engagement in knowledge sharing requires a diagnosis of the current situation, so as to identify factors determining the employees' inclination of a given organization to exchange knowledge and evaluate the current level of this inclination. It will permit then a more adequate selection of methods and practical techniques when building the engagement.

Questions

1. Characterize the role of knowledge in the information society.
2. What is knowledge sharing in an organization?
3. Which elements influence the employees' willingness for knowledge exchange?
4. In which way can you build and increase the level of personal engagement in knowledge sharing?

Table 3. Questionnaire. The research into the level of engagement in knowledge sharing among employees

1. Seniority:
2. Occupied position:
3. My evaluation of knowledge sharing in my workplace:

	I definitely agree	I agree	I quite agree	I do not think I agree	I do not agree	I definitely do not agree
a) I participate in a process which can be defined as "knowledge sharing among collaborators"						
b) I will gain more than I waste participating in such a process						
c) I receive "an example from the management"						
d) My colleagues are an essential source of knowledge						
e) My knowledge sharing is appreciated and recognized by my colleagues						
f) My knowledge sharing is appreciated and recognized by my superiors						
g) I can notice the superiors' activities aiming at encouraging and facilitating knowledge sharing						
h) In my opinion knowledge sharing among employees has a great influence on the competition level of an organization on the market						
i) In my workplace there is no strong competition between employees						
j) The technological aspect of the communication system in my organization supports knowledge sharing						
k) The higher the costs of my acquisition of the knowledge which I would have to deliver, the stronger the stimuli motivating me to share this knowledge must be						
l) The higher I rate the value of the knowledge which I would have to share, the stronger the stimuli motivating me to share this knowledge must be						
m) The type of the knowledge which I can / would be able to share is very difficult to deliver						

4. The most frequent forms of my sharing knowledge with my collaborators is (please define by means of numbers: 1 - the most frequent form, 5 - the rarest or skip if not applicable):

	1	2	3	4	5
a) by phone					
b) during direct formal conversations (organized meetings, conferences, etc.) in the workplace					
c) during direct informal conversations (having coffee together) in the workplace					
d) during direct conversations outside the workplace					
e) via electronic communication channels (e-mail, communicator, web page, etc.)					
f) another form (what kind?					

5. The process of knowledge sharing between me and my collaborators occurs on the average:
 a) every day
 b) several times a week
 c) once a week
 d) once a fortnight
 e) once a month
 f) more seldom

6. The importance of the motives which can induce or induce me to knowledge sharing with other employees:

	very important	important	of little importance	of no importance
a) the awareness of my realizing a good deed and the comfort associated with it				
b) an increase in reputation, good opinion in other people's eyes?				
c) an example of the superiors				
d) other forms of encouragement by the superiors (creating an opportunity to knowledge exchange, promoting the attitudes connected with knowledge sharing)				
e) return from the co-workers				
f) acknowledgement, support and praise (immaterial)				
g) material recognition				
h) organizational culture (the working environment, the atmosphere), which includes knowledge sharing as one of its permanent components				
i) lack of competition between employees				
j) lack of fear of losing one's position				
m) lack of anxieties about any unsuitable utilization of the knowledge which I delivered				

7. My readiness to knowledge sharing results from my character, I do not need any special encouragements
 a) I definitely agree
 b) I agree
 c) It is difficult to say
 d) I do not agree
 e) I definitely do not agree

8. I rate my own level of engagement in knowledge sharing with collaborators as:
 a) low
 b) average
 c) high
 d) very high

9. I consider myself a person who is:

	definitely yes	I think so	not really	definitely no
a) full of optimism				
b) self-dependent, daring, courageous				
c) an altruist				
d) highly self-evaluated				

Personal details:

- Sex: a) female b) male
- The year of birth:
- Married: a) yes b) no
- I have a child / children up to the age of 18: a) yes b) no

Table 4. Managers work on their subordinates' weak and strong aspects

Country	Working on the subordinates' strong aspects	Working on the subordinates' weak aspects
U.S.A.	41%	59%
Great Britain	38%	62%
Japan and China	24%	76%

Source: Buckingham, 2007

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PERFORMANCE AND ORGANIZATIONAL LEARNING CAPABILITY IN POLISH COMPANIES

ALEKSANDRA RUDAWSKA
UNIVERSITY OF SZCZECIN

ALBERTO LOZANO PLATONOFF
UNIVERSITY OF SZCZECIN

Abstract

This research paper examines relation between organizational learning capability and firm performance taking into consideration ten dimensions of learning capability on three learning levels that were identified basing on '4I' organizational learning framework. The survey was conducted on the sample of 92 medium and large manufacturing firms in Westpomeranian region in Poland. The results suggest that firms with above-average performance have greater learning capabilities in four dimensions. These firms create better organizational learning environment on every learning level than their lower performance counterparts, and this may have important implications for developing conditions enhancing learning in Polish companies.

Keywords: organizational learning, organizational learning capability, performance, manufacturing firms, Westpomeranian region, Poland

Introduction

Changeable and complex environment cause that successful actions and strategies of the companies emerge as they learn and adjust to that changing conditions (Mintzberg, 1993). This learning approach to strategy (Mintzberg et al, 1998) distinguishes organizational learning phenomenon that is one of the key mechanisms of organizational strategic renewal (Brzeziński, 2000). Strategic renewal is connected with the openness to challenging the established strategies and revision of goals, values and rules (Ravasi, Lojacono, 2005). Moreover, it harmonizes continuity and changes of functioning that is an important factor of company's sustained existence and competitive advantage

(March, 1991). The above-mentioned issue, among the other things, was the reason of interest increase in organizational learning phenomenon among researchers (Crossan, Guatto, 1996) and practitioners in 80s and 90s of XXth century. Since then, companies have started to strive for creating environment enhancing learning but in order to do this successfully the understanding of organizational learning mechanisms is of great importance.

For Polish companies the issues concerning enhancing organizational learning seem to be important, especially in terms of: competition intensity resulting from not only rapid globalization but also Poland's accession to the EU (since 2004), insufficient national infrastructure, significant changes on the labor market and many legislation changes connected with the need to reform many domains of socio-economic life. Although for last 20 years, since the change of economic system in Poland, the managerial staff has developed significantly their skills, still many companies have difficulties in managing functioning conditions variability. In this context, one can pose question, whether creating conditions in organization that enhance and stimulate learning is valid in terms of performance, because in Poland, so far, there was no studies that undertake this problem. Presented research, to some degree, fill the gap.

The aim of this paper is to identify organizational learning capability (OLC) dimensions taking into consideration three learning levels and to analyze the relation between them and organizational performance. The following research questions were posed. Do above-average performance companies create better conditions enhancing organization learning than companies with worse performance? Which OLC dimensions distinguish

above-average performance companies from other companies, and what are the practical propositions?

Organizational learning mechanisms

The development of organizational learning (OL) theories that started from questing for answers concerning organizational development mechanisms (Steinmann, Schreyögg, 1998) was rapid especially in 90s of XXth century, but almost none of the models, definitions and concepts proposed till now were widely accepted yet. This situation primarily results from the complexity and multidisciplinary of organizational learning. Consequently, in the literature there is wide theoretical diversity that made some semantic chaos, which caused, among other things, a decrease of OL popularity among practitioners (Bapuji, Crossan, Rouse, 2005) and researchers (Miner, Mezias, 1996). The in-depth literature research and synthesis of theories enabled identification of several issues, that are of great importance in understanding and analyzing of organizational learning mechanisms, i.e.: meaning of learning levels, changes in knowledge and behavior (action) and identification of social, psychological and information processing processes of learning (Rudawska, Lozano, Sysko-Romańczuk, 2006; Crossan et al. 1995; Easterby-Smith, 1997; Shrivastava, 1983; Pawlowsky, 2001).

In the definition of OL proposed D. Vera and M.M. Crossan (2003, p 123) those three issues were taken into consideration: 'organizational learning is the process of change in individual and shared thought and action, which is affected by and embedded in the institution of organization. When individual and group learning becomes institutionalized, organizational learning occurs and knowledge is embedded in non-human repositories such as routines, systems, structures, culture, and strategy'.

This perception of OL distinguishes three learning levels - individual, group and organization (as an institution), what is of great importance (Yeo,

2003). An analysis of OL from the perspective of each level facilitates identification of their roles in the comprehensive learning of the organization, identification of factors enhancing and stimulating learning as well as its potential inhibitors. Additionally, perception of OL without distinguishing multi levels can cause either omitting important role of individuals in learning or oversimplification of learning mechanisms as a consequence of direct transfer of individual learning model to the organization as a whole. However, those levels may suggest a hierarchy among learning processes. In fact, all of them intermingle and learning is rather simultaneous on every level (occurs on different levels at the same time). OL is a learning cycle that starts on individual level, is embedded on organizational level (through or without group level) and finally is transferred into actions that are going to be ground for the future learning. During organizational existence those cycles repeat, overlap and refer to many areas of organizational functioning. It is important to notice that in the situation of change in knowledge and action of an individual or even group without transferring and embedding it into institution (organizational level), learning mechanism is interrupted, and there is no complete OL cycle (Kim, 1993, Rokita, 2003).

M.M. Crossan, H.W. Lane i R.E. White (1999) presented such multilevel OL framework where they defined three learning levels (individual, group and organizational) and four processes - '4I': intuiting, interpreting, integrating and institutionalizing - that occur on those levels and between them.

In this study OL was examined through its structure (i.e. learning levels) therefore the '4I' learning processes were classified to each level defining specificity of learning on each of them, what is presented in table I. The processes of 'interpreting' and 'integrating' in the Crossan et al (1999) framework occur between the levels, as their role is to glue the learning structure, but for the need of this study they were assigned to individual and group levels.

Table I - Description of OL with identification of learning levels

Learning levels	OL processes according to '4I' OL framework	General description	Possible learning results
OL on individual level	Intuition Interpreting to oneself	Occurs in minds of employees. Consists in developing new insight and understanding based on former knowledge and experience. Usually brought about by external stimulus.	Development of individual knowledge concerning the company, of expert or entrepreneurial nature, which is realized by that individual.
OL on group level	Interpreting to others Integration	Occurs during interactions between people through conversation (discussion, dialog), mutual actions and group decision-making.	Common knowledge, shared problem and reality interpretation as well as development of new knowledge different from individual one of each interaction participants.
OL on organizational level	Institutionalization	Defining, embedding and disseminating learning results of individuals and/or groups (i.e. goals, ways of action, resource allocation, products/services, etc.), and mechanisms of controlling internal coherence between those learning results as well as between them and strategic context of the company.	Institutionalized knowledge of the company, embedded in nonhuman elements of organization (independent of specific individual) that together create consistent entity enabling efficient and effective action and are compatible with environment requirements.

Source: based on Crossan, Lane and White (1999) and Botnis, Crossan and Hulland (2002)

Authors of '4I' OL framework noticed that knowledge developed and embedded on the group and organizational level (institutionalized) determines future learning of the organization as it changes the way the organization is functioning. This feedback mechanism indicates that decision-makers should be aware of how their current decisions influence future learning (Crossan, Lane, White, Djurfeldt, 1995). In other words, results of former learning embedded in structure, culture, strategy, routines, etc. mold future organizational learning capability (OLC).

Organizational learning capability dimensions

Organizational learning capability (OLC) of an enterprise is defined as capability of organization to process and change knowledge (Zgrzywa-Ziemak, 2006) and to modify its behavior to reflect the new cognitive situation with a view to

improving its performance (Jerez-Gómez et al, 2005). Connecting this definition with multilevel OL framework, the OLC in this study is understood as capability to change knowledge (modify and develop new one) on individual and group level and transfer it on organizational level in order to embed it in organizational memory. The capability manifests in developing conditions and managerial practices, which influence and support learning effectiveness (Goh, Richards, 1997) on all levels.

An in-depth analysis of the literature on the specificity of learning on individual, group and organizational levels, according to the learning processes, enabled identification of moments of learning as well as main conditions of those learning processes, which were classified as conditions related to individuals (i.e. individual knowledge, motivation, personality) and conditions determined by organizations (procedures and practices). The learning moments and conditions are presented in tables II to IV.

Table II - OL conditions on individual level

Moment of learning on individual level	Individual conditions	Organizational conditions
<ul style="list-style-type: none"> -Performing current tasks and analysis of appearing problems. -Analysis of information concerning individual, group, team and organizational performance (during control or upon reflection on received information). -Receiving new information concerning organization and environment and reflection on it. -Gaining new knowledge/solution during training, conference, reading professional readings. -Contact with individuals or organization outside. -Performing new tasks (new task type or similar task in new context). 	<p>Knowledge and experience:</p> <ul style="list-style-type: none"> -professional knowledge -diversity of experience -knowledge with wider context. <p>Abilities and skills of:</p> <ul style="list-style-type: none"> -analysis, synthesis, problem redefining -constant development, self-discipline -risk and uncertainty tolerance. <p>Internal motivation to action.</p>	<ol style="list-style-type: none"> Information accessibility: feedback information on performance, diverse and excessive information in relation to individual needs, information about department and whole organization. Motivation system stimulating employees' initiative taking by e.g. individual and group performance responsibility, acknowledging and rewarding creative and innovative actions, encouraging risk taking. Range of employees' autonomy (cultural aspect): autonomy in deciding about individual goals, ways of individual task performance, participation in decision-making process, supporting by managers 'risk-taking' and innovative employees, enabling performing experiments, openness to employees ideas.

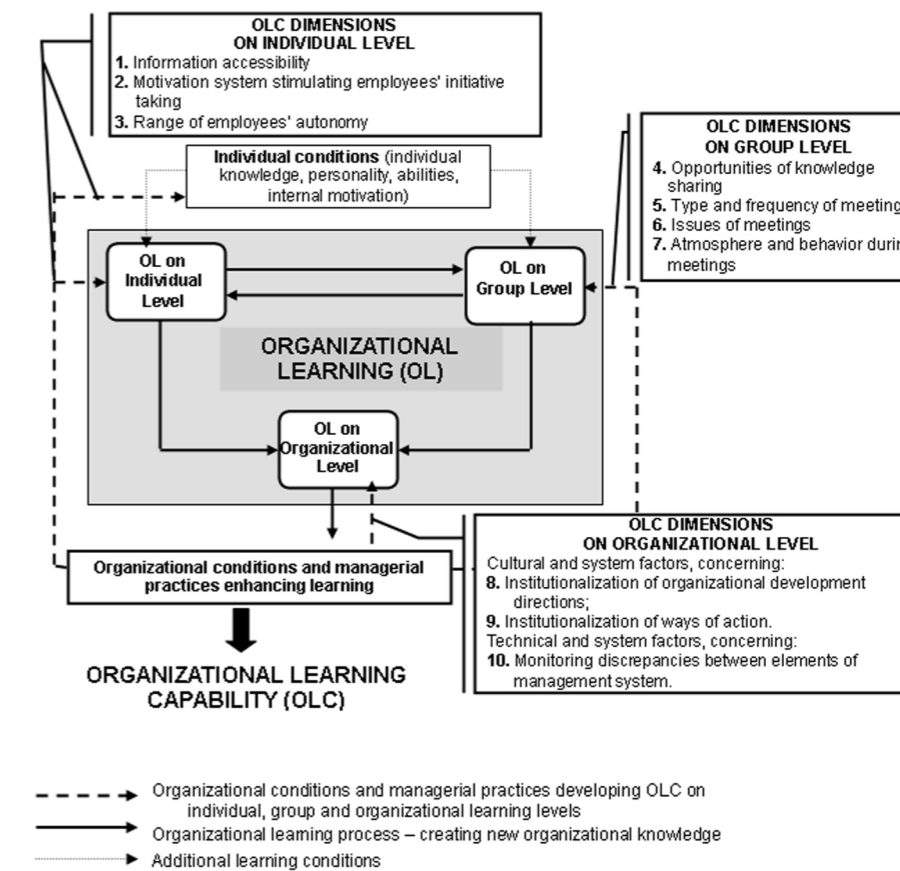
Table III - OL conditions on group level

Moment of learning on group level	Individual conditions	Organizational conditions
<p>Planned interactions between individuals, organized with certain frequency in order to make shared decisions and take shared action:</p> <ul style="list-style-type: none"> -regular, planned working meetings; -creating task teams that solves problems and act together; -trainings, workshops, seminars for individuals from one department/organization. <p>Informal (unplanned, irregular) interactions between individuals with no defined plan:</p> <ul style="list-style-type: none"> -consultation with other employee or supervisor -telephone conversation; electronic information exchange (e.g. e-mail) -giving the same information to the group of individuals – internal magazine, bulletin board -informal conversation 'at the coffee table'. 	<ul style="list-style-type: none"> -Individual psychological safety during meeting or face-to-face conversation. -Attitude toward other interaction participants. -Internal motivation for sharing of individual knowledge and understanding others. -Conversational skills and ability of ideas exchange. -Individual knowledge, information and experience. 	<p>Managerial attitude to the role of interactions between employees in performing organizational tasks that manifests through:</p> <ol style="list-style-type: none"> Creating opportunities of knowledge sharing, i.e. favor of creating diverse and inter-department task/problem teams, organizing internal seminars and workshops, creating organizational infrastructure supporting communication and knowledge sharing. Type and frequency of planned meetings in different vertical and horizontal cross-sections of the organization. Issues brought up during meetings – concentration on the performance control or searching for new solutions (exploitation vs. exploration approach). Atmosphere and behavior during meetings – developing atmosphere of psychological safety and willingness of knowledge sharing and developing new knowledge.

Table IV - OL conditions on the organizational level

Moment of learning on organizational level	Organizational conditions
<p>Developing and modifying organizational memory elements (in formal and informal form):</p> <ul style="list-style-type: none"> -Embedding and disseminating knowledge through creating product prototypes, preparing goals and plans, developing strategy. -Introducing adjustments to strategies, plans, goals and ways of action in order to adjust the organizational knowledge embedded in them to changing conditions. -Identifying, recording and disseminating ways of action, division of work, organizational rules and modifying them in order to maintain internal coherence between those elements. 	<p>Systemic (resulting from management system in organization) and cultural factors (management attitude) influencing the range, regularity and generality of:</p> <ol style="list-style-type: none"> institutionalization of organizational development directions, institutionalization of ways of action and their modification, <p>Technical and systemic factors concerning:</p> <ol style="list-style-type: none"> monitoring discrepancies between elements of management system and introducing modifications... (developing indicators, monitoring criteria and procedures; developing information systems gathering and delivering information).

Figure 1 - Organizational learning capability (OLC) dimensions



The organizational conditions seem to play a vital part as they influence OL on each level directly (i.e. form enhancing or inhibiting conditions) and indirectly (i.e. intensify or influence change of individual conditions). Therefore, we assumed that OLC dimensions apply only to them. Eventually, ten dimensions of OLC were defined: three connected with the individual level, four connected with group level and three connected with the organizational level as presented in figure 1 and described in more detail in tables II to IV (organizational conditions column).

Research methods

Sample and data collection procedures

The aim of this postal questionnaire survey study, conducted in April-July 2006, was evaluation of ten OLC dimensions of medium and large-sized (according to employment criterion, number of employees was above 49) manufacturing enterprises in Westpomeranian region in Poland and identification of those OLC dimensions that differentiate companies with above-average performance from their lower performance counterparts. A sample of 271 companies according to the above-mentioned criteria (size, industry – Polish Classification of Activities no. 15-37, region) was drawn from commercial databases. The questionnaires, which were preceded with cover letter and phone conversation in order to explain survey aim and encourage participating in the research, were sent to top managers by mail or e-mail (depended on the respondents preference). The choice of top management as respondents was dictated by the contents of the items that evaluate range and intensity of practices and organizational actions in the whole company. It was assumed that top management possesses the best knowledge of it. Finally, 92 questionnaires returned giving the response rate of 34%, what for mail survey is a quite good result. The analyses run with usage of 85 correctly filled in questionnaires and STATISTICA software, version 7.1.

Measuring organizational learning capability dimensions

After analyzing of many measures on OLC we decided to develop new scales for ten OLC dimensions' constructs. Firstly the list of items concerning all ten scales was developed basing on the literature study. The items were verified and supplemented during first run of interviews with top and middle management and researchers. All items were scored on a five-point Likert scale with use of different quantifiers: strongly agree - strongly disagree, very rarely - very often, don't organize - few times a week. The second round of interviews was conducted in order to check understanding, relevance, redundancy, unambiguity and wording of the items (face validity). Finally the questionnaire consisted of 63 items measuring ten OLC dimensions.

After collecting empirical data the reliability analysis was made to analyze to what extent different items are coherent with each other and whether they can be used to measure a specific magnitude. The exploratory factor analysis was made for the OLC dimensions on individual, group and organizational level using principal components extraction with oblique rotation. Several items were dropped (due to too low factor loadings or high loadings for more than one factor) and few were used to measure other OLC dimension than it was initially intended (with paying attention to the logical relation with new dimension). Eventually ten factors (in total) emerged as ten learning dimensions, see table V.

For the internal consistency evaluation of the scales the coefficient Cronbach's α was used and analysis of average correlation between items. Each of ten scales showed good internal consistency as Cronbach's α was close to or exceeded 0.6 (Templeton, Lewis, Snyder, 2002; Sagan, 2003) and the average correlation between items of the scales was in the range of 0.2-0.5 (see table V), what means that scales are homogenous and don't include unnecessary items.

Table V - Mean, standard deviation and reliabilities of OLC dimensions scales

OLC dimensions	No. of items	Mean	SD	Cronbach α	Standardized α	Average correlations between items
Individual learning level						
Motivation system encouraging employees' initiative taking	4	3.56	0.87	0.59	0.60	0.27
Information accessibility	6	4.22	0.64	0.80	0.82	0.44
Range of employees' autonomy	7	3.77	0.80	0.84	0.86	0.46
Group learning level						
Opportunities of knowledge sharing	3	3.39	1.16	0.76	0.76	0.52
Type and frequency of meetings	5	3.93	1.09	0.78	0.78	0.43
Issues of meetings	5	3.48	0.71	0.76	0.76	0.39
Atmosphere and behavior during meetings	6	4.03	0.57	0.76	0.77	0.36
Organizational learning level						
Institutionalization of organizational development directions	4	4.07	0.68	0.86	0.86	0.48
Monitoring discrepancies	6	4.36	0.71	0.87	0.87	0.53
Institutionalization of ways of action	7	4.02	0.71	0.73	0.74	0.42

Table VI - Correlations between accounting performance measures and performance evaluated by managers

Performance evaluation criteria	Accounting measure	Pearson correlation (r_{xy})	Significance level (p)
Return on sales	Company ROS /Industry ROS	0.46	0.001
	Company ROS	0.58	0.000
Net profit level	Company net profit/ Mean industry net profit	0.45	0.001
	Company net profit	0.43	0.002

Measuring organizational performance

The organizational performance was measured using perceptual scales, where respondents evaluated their companies in seven categories (market share, sales growth, return on sales, net profit (Spanos, Lioukas, 2001), customer satisfaction, employees satisfaction, quality of products). In order to minimize common method bias other quantifiers were used then in measuring OLC dimensions. The performance items were scored with reference to market competitors on

a five-point Likert scale ranging from significantly below the average through to significantly above the average.

The factor analysis, coefficient Cronbach's α and average correlation between items was used for reliability and internal consistency analysis of performance scales. All factor loadings were above 0.6, Cronbach's α was 0.87 and correlation – 0.53, what validated the reliability and internal consistency of the performance scale.

As further analysis of convergent validity of the performance measures, the accounting measures of the 63 companies (out of 85) for which financial data could be obtained were correlated with their subjective responses in the questionnaire, see table VI.

In this subsample, return on sales and net profit in relation to the mean in the industry correlated significantly with the respective subjective measures (0.46, 0.45, $p < 0.001$ respectively). The results obtained are consistent with research of Y.E. Spanos and S. Lioukas (2001) and indicate that subjective assessment of business performance obtained by top managers correlate strongly, but not perfectly, with objective measures.

Methods of analysis

In order to identify those OLC dimensions that differentiate companies with above-average performance Kruskal-Wallis one-way analysis of variance was used. Usage of this non-parametric method resulted from the fact that data obtained didn't have normal distribution.

Before the analysis of variance the companies were classified into three groups according to their performance: below-average performance, average performance and above-average performance companies. These groups were distinguished using k-mean method in data clustering analysis, aiming at obtaining maximal similarity between subjects in one cluster and minimal one between members of different clusters.

Results

In the result of data clustering companies were divided into three groups: 29 companies with above-average performance, 39 firms with average performance and 17 below-average performance firms. The greatest differences between groups appeared in market share, sales growth, return on sales and net profit while the smallest ones were in customer satisfaction and quality of products. On average, the latter two variables were assessed above 4 points in the range from 1-5, see figure 2. It may mean that managers are more critical with reference to more measurable evaluation criteria, and that customer satisfaction and products quality is quite similar in the examined companies.

Figure 2 - Differences in performance assessment between below-average, average and above-average performance companies

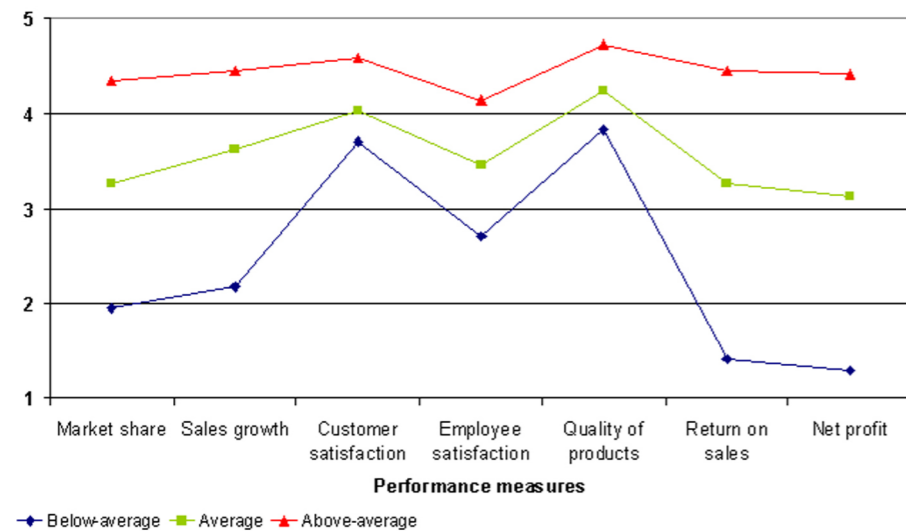
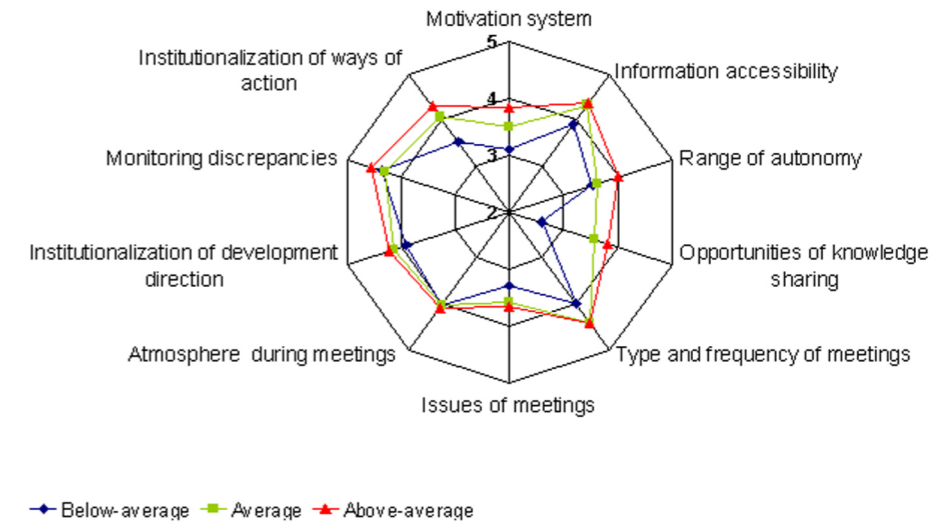


Figure 3 - OLC dimensions in below-average, average and above-average performance companies



The Kruskal-Wallis analysis of variance allowed exploring relation between performance and OLC. Only for four out of ten OLC dimensions there was a positive relationship between them and performance, where higher OLC dimensions scores tended to be associated with higher performance, see figure 3 and table VII.

Companies classified as the group with above-average performance differ from their lower performance counterparts in creating motivation systems that stimulate employees to take initiative, passing on information on individual and firm performance and goals, creating possibilities of knowledge sharing other than formal meetings as well as recording and disseminating good and proven ways of action or lessons from former actions.

Discussion of results and conclusions

The presented results do not indicate explicitly the relation between performance and OLC as only for four out of ten OLC dimensions there were significant differences between groups of companies. However, those four OLC dimensions that differentiate above-performance companies from others apply to every level of learning in organization. So, not only institutionalizing, disseminating results of the former learning and monitoring differences between plans and actions (organizational level) is related with better performance (Marsick and Watkins, 2003) but also creating conditions and atmosphere stimulating employees to search for new solutions and actions (individual and group level). This could be an encouragement for practitioners to pay more attention to creating conditions for teamwork, streamlining information flow and communication as well as modifying of motivation system so that to encourage engagement and openness towards novelties.

Table VII - Mean OLC dimensions scores for below-average, average and above-average performance companies and Kruskal-Wallis analysis of variance

		Below-average performance	Average performance	Above-average performance	Kruskal-Wallis analysis of variance (H)	Significance level (p)
	N	17	39	29		
Individual Level Learning Dimensions	Motivation system encouraging employees' initiative taking	3.10	3.50	3.82	7.22	0.027
	Information accessibility	3.90	4.32	4.36	7.48	0.024
	Range of employees' autonomy	3.53	3.63	4.02	4.99	0.083
Group Level Learning Dimensions	Opportunities of knowledge sharing	2.60	3.57	3.82	11.51	0.003
	Type and frequency of meetings	4.00	4.40	4.42	1.05	0.591
	Issues of meetings	3.29	3.58	3.66	3.08	0.215
	Atmosphere and behavior during meetings	4.03	4.03	4.10	0.55	0.759
Organizational Level Learning Dimensions	Institutionalization of organizational development direction	3.90	4.14	4.23	4.87	0.088
	Monitoring discrepancies	4.36	4.31	4.55	5.04	0.081
	Institutionalization of ways of action	3.51	4.05	4.29	11.87	0.003

On the individual learning level, from the performance perspective, employee motivation and information accessibility turned out to be of the great importance. The interesting thing is that for the total sample motivation system (mean 3.56) has one of the lowest scores among ten OLC dimensions while giving information to employees (4.22) – the highest one. It means that companies pay more attention to making information available to employees in order to perform tasks correctly than to motivating them. So, they concentrate more on giving employees tools than on creating appropriate atmosphere of engagement. Motivating in many cases is treated as an informal practice that doesn't need system solutions and usually is identified with wage level only. Companies rarely develop financial and non-financial incentives that award pro-innovative and active behavior (mean 3.0). However, this practice differentiates above-performance companies from the others. In relation to information accessibility better performing companies more often give employees feedback

information involving individual performance, as the basis for future improvement, and inform them about organizational goals and strategies, so that they would be able to perceive their work in bigger perspective.

In relation to the group learning level the above-performance companies in the wider range than others introduce actions, which are enabling sharing and creating collective knowledge in the groups of employees from different organizational areas. It is the only one OLC dimension connected with group learning level for which the relationship with performance was found. The above-average performance companies distinguish from other sub-sample, in particular, with the positive attitude to forming inter-department and inter-functional problem and project teams. This practice affects more systemic and comprehensive problem solving (possibility of analyzing an issue from many perspectives), improvement of information and knowledge flow between departments as well

as better understanding between employees normally working in a 'distance', which is positive in terms of possible future cooperation. Moreover, those companies more often organize internal seminars and workshops in order to stimulate sharing of knowledge, experience, problems and possible solutions. This kind of meetings can influence better personalization of relations between employees, analyzing the scale of possible problems and working out the grounds for collective problem solving.

The above-mentioned OLC dimension had the lowest score (mean 3.39) in the total group of examined companies. It means that more flexible and crossing the 'internal boundaries' ways of knowledge sharing are not so popular in the companies in comparison to typical, planned, 'in-department meetings'. The results obtained support a proposition that organizing different forms of knowledge and experience sharing positively influences performance, what again should be an encouragement for practitioners (especially in Poland) to apply teamwork and more flexible forms of work and communication.

As far as organizational learning level is concerned, there is a positive relationship between the dimension of institutionalization of ways of action and performance, what was predictable especially in manufacturing industry (Sadler-Smith et al, 2001). Among the practices that differentiate above-average performance companies from the others there are recording and disseminating proven ways of action and developing standardized solutions for repeatable problems so that to minimize situations of 'reinventing the wheel'. Additionally, this group of companies more often evaluates results of the projects and draws conclusions for the future actions. Those results indicate the importance of disseminating, embedding and using proven and correct solutions.

In the strategic perspective to the organizational learning it is assumed that creating conditions supporting and stimulating learning results in sustained existence and above-average performance (Easterby-Smith, 1997). However, the discussion on possible relations between organizational learning and performance is still open (Crossan et al, 1995). There are only several empirical studies in this area (among the others Sadler-Smith, Spicer, Chaston, 2001; Crossan, Hulland, 2002; Marsick, Watkins,

2003; Yeo, 2003), which indicate that there is a relationship between organizational learning and performance. This study has raised the possibility that better performing companies characterize by higher organizational learning capability. Two of the OLC dimensions, motivation system and creating opportunities of knowledge sharing, turned out to be important in terms of performance although rather neglected in the examined Polish companies.

Nevertheless, this study has some limitations, among which there are specified research context as the survey was directed to middle and large-sized enterprises, in the manufacturing sector, in one region in Poland, and there was only one respondent per firm. Therefore future study should address a wider group of sector and respondents per organization (and aggregate scores at the level of organization). It seems also important to consider the influence of company's development strategy and phase of the organizational life cycle on OLC and performance relation.

Questions

1. Which of the organizational learning capability dimensions are the main problems in analyzed companies? What are the possible reasons and consequences of this problems?
2. If you were a manager of above-average performance companies what actions would you apply to make your firm more competitive?
3. Propose a program of organizational learning stimulation for the group of below-average performance companies.

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CHANGES IN ORGANISATIONAL CULTURE IN POLISH ENTERPRISES

KATARZYNA GADOMSKA-LILA
UNIVERSITY OF SZCZECIN

Abstract

The paper discusses the problem of organisational culture and its relevance to the existence of the company, and it presents the results of empirical research into organisational culture. The two research projects were carried out in the years 2001 and 2008, and the samples consisted respectively of 150 and 100 big and medium-sized companies from the West Pomeranian Province in Poland. Basing on the empirical evidence, the cultures of the analysed entities and changes in their cultural patterns over the 7-year period were characterized. The empirical evidence indicates that organisational culture in the analysed entities has undergone changes in all the investigated areas, i.e. strategy, organisational structure, and human resources management. The changes observed let us reach a conclusion that on the one hand the search for sources of competitive advantage in Polish companies has been recently focused more on the "soft" management tools area, while on the other – the dynamics of changes and potential for its further exploration make this area a prospective instrument of raising the potential of Polish companies.

Keywords: organisational culture, Poland, changes, enterprises.

Introduction

The increasing significance of "soft" management factors observed over the last years has drawn more attention to organisational culture and its impact on the efficiency of any business operations and improvement in enterprises' competitive performance. Since the key success factors in today's business include the speed, flexibility, integration and innovation (Evans, 2005), conscious shaping and developing of cultural patterns which promote those attributes becomes of highest importance. They should refer to the major areas of an enterprise's operation,

such as strategy, organisational culture or human resources policy. As a result, it becomes crucial that the management be more aware of the relevance of organisational culture to the successful performance of the enterprise and efficient cultural change management.

The problems of organisational culture seem to be of extreme importance to Polish enterprises. The heritage of a centrally planned economy on the one hand, and on the other – the dynamic globalization and membership in the European Union and related changes in the labour market and legal system, accompanied by economic transformation, imply all a diversity of cultural patterns in Polish companies. Passiveness and conformism, characteristic of the pervious system, are intertwined with openness to change and initiative, so characteristic of the free market principles. As a result, Polish companies in the "soft" areas of management, especially related to culture, become an interesting subject to explore.

The aim of the paper is to present the empirical evidence of the diagnosis of organisational culture made by the author in the years 2001 and 2008. The research samples consisted respectively of 150 and 100 big and medium-sized companies from the West Pomeranian Province in Poland. In the conceptual phase, the following questions were formulated: what organisational cultures are in the West Pomeranian enterprises? Have they undergone any changes, and if so – what kind of changes?

The empirical material has revealed a profile of organisational cultures in the analysed enterprises. The key areas subject to investigation included: strategy, organisational structure and human resources management. It was followed by an analysis of changes in cultural patterns over the 7-year period. All the evidence allowed formulation of conclusion concerning the desired direction of development of organisational culture.

The essence of organisational culture and its relevance

Organisational culture has a significant impact on the performance of an enterprise perceived as a system existing within a given market environment equipped with its objectives, strategy, organisational structure and human resources. Being the centre of the enterprise, it is a driver for all the other elements (Weiss, Wiest, 1991). The implications of organisational culture are taken into account when strategy is formulated, objectives set, labour divided, and HR policy developed; they are also an intrinsic part of relationships among employees, or relationships between the enterprise and its environment, etc. Organisational culture is a "glue" linking the objectives and interests of employees (cooperation, trust) with those of the enterprise (e.g. competitiveness, profitability) (Füchsel, 2002). A clear distinctive organisational culture reduces uncertainty, providing all the players with one common system of interpretation, certain social order, by defining clearly what is expected from employees; it is a guarantee of continuity as new members share the same basic values and apply the same principles. Moreover, it helps reducing the uncertainty, explaining various phenomena and processes, and providing the patterns of adaptation activities (adaptation function) (Sułkowski, 2002) and internal integration, offering a common way of thinking and acting (integration function) (Schein, 1984). The culture informs also the employees about the required level of self-control, obedience to certain rules and the way of understanding the rationality (perception function) (Sikorski, 1992). It sets the limits for the organisation and provides

the sense of identity to its members; it encourages involvement in something more than own business, contributes to better stabilization of the social system and serves as an explanation and a control mechanism. Organisational culture allows better cooperation and more efficient communication, it promotes decision making and problem solving; it is a tool of informal control, supporting motivation, loyalty and involvement, and allowing faster conflict resolution thus decreasing the fluctuation of employment (Steimann, Schreyögg, 1995).

In the world, organisational culture has been the subject matter of numerous research projects and analyses for a long time. As long ago as in the 1940s and 1950s, it was in the centre of interest, especially in social sciences (Harrison, Huntington, 2003).

The relevance of organisational culture in Poland, however, had not been perceived until the late 1980s. The first researchers to have addressed this subject matter were M. Bratnicki, R. Kryś and J. Stachowicz (1986), and Cz. Sikorski (1992).

Since the early 1990s, and especially at the moment, much more studies and research project exploring this area have been carried out, with the most interesting by the following authors: M. Kostera (1996), L. Zbiegień-Maciąg (1999), Ł. Sułkowski (2002), M. Czerska (2003), G. Aniszewska (2007). More and more often organisational cultures of Polish enterprises are explored, too. A review of the major research projects in this field has been provided in Table I.

Table I. Research projects exploring organisational culture in Polish companies

No.	Author	Year	Aim of the research
1	M. Bratnicki, R. Kryś, J. Stachowicz	1985-1986	Identification of three cultural characteristics of the organisation: system of values, organisational climate, system of beliefs among top management
2	Cz. Sikorski	1991	Identification of the management's acceptance of cultural patterns of central planning or market, and evaluation of the cultural distance which needs to be covered while transforming the central planning economy into a market economy.
3	A. Sitko-Lutek	1995-2004	Diagnosis of learning styles among management and organisational culture allowing identification of the cultural gap that affects the efficiency and operations of the organisation, and indicating interrelations between learning styles and organisational culture.
4	A. Stachowicz-Stanusch	1997-1998	Diagnosis of organisational culture and marketing orientation of the enterprise.
5	B. Mikuła, W. Nasierowski	1990s	Identification of characteristic features of organisational culture in Polish enterprises.
6	A. Glińska-Noweś	2000	Identification of the activities undertaken by Polish enterprises to shape their organisational culture in the most desired direction from the viewpoint of their mission and strategy.
7	R. Kamiński	2000	Analysis of the effect of consistent organisational culture on the innovativeness of the enterprise.
8	B. Fryzeł	2001	Identification of the impact of organisational culture through quality-based management on the enterprise's competitiveness.
9	K. Gądomska	2001-2008	Diagnosis of the organisational culture of domestic and foreign-owned enterprises, identification of differences in cultural patterns and analysis of their effect on the efficiency of management.
10	M. Czerska	2001-2003	Identification of the real and declared organisational culture in the context of its adjustment to the requirements of the strategy adopted.
11	R. Knapki, S. Pierzchawka	2003	Identification of the type of organisational culture preferred in SMEs operating in Poland and the impact of a manager on the shaping of organisational culture.
12	J. Mróz	2004	Identification of organisational culture in SMEs with an indication whether the management of SMEs perceive the relevance of organisational culture.
13	A. Buszczak	2005	Cultural determinants in motivation systems and involvement of employees.
14	S. Stańczyk, E. Stańczyk-Hugiet	2006	Identification of values and practices characteristic of organizational culture promoting certain type of knowledge strategy.

Source: own study based on Bratnicki 1986, Sikorski 1992, Sitko-Lutek 1997, Stachowicz-Stanusch 2001, Mikuła, Nasierowski 1995, Glińska-Noweś 2000, Kamiński 2002, Fryzeł 2004, Gądomska 2003, Czerska 2003, Pierzchawka 2004, Mróz 2005, Buszczak 2005, Stańczyk-Hugiet 2007.

An analysis of the empirical evidence gathered by the above-listed authors indicates that organisational culture of Polish companies is usually burdened with the heritage of a centrally planned economy. The enterprises operating in that system were not independent entities; they were an element of a whole, a part of a system. They did not own their resources and made no strategic decisions; as such – they were strongly dependent on the central authorities. The management in those enterprises was very susceptible to steering from outside and experienced a strong emotional need to submit to the decisions made at the central level. It was reflected in their role, which involved mainly supervision over plan execution, keeping employees at a distance, unwillingness to delegate authority, poor motivation system, lack of team working, etc. The attitudes of management translated into the attitudes of employees – their passivity, pretending of activity, inefficiency. Moreover, social consent to demonstration of weakness, admittance of failures and complaints was also observed. Employees were mostly passive and demanding, and as a

result they showed no respect to their customers or superiors (management had no standing among their subordinates) and did not identify themselves with the organisation. The employees valued the quality of interrelations at work and as a consequence informal contacts were of highest importance. Due to the fact that the basic cultural norm was to execute a plan, most of the tasks were focused on current problems, related mainly to the access to essential resources and the continuity of production. For this group of enterprises, it can be hardly said they developed or followed a strategy as such. Due to the lack of authority in this aspect, the management focused on central decision makers' needs rather than strategic management. The environment was perceived as stable and predictable, and the enterprises operated so as to keep the existing status quo, they were reluctant to change and risk. Organisational structures were lean and centralised; functionality was the main criterion for creation of organisational cells. The enterprises operating in the central planning system were rather uniform in terms of culture.

Some researchers claim even that in this case it is hard to talk about organisational culture at all.

Even though there has been nearly 20 years since the transition in Poland began, and the economy has enjoyed periods of high growth, many enterprises still cherish the cultural patterns characteristic of the previous system. Within the organisational culture, the transformation is still taking place, which is why this area is called a "neglected area of economic transformation" (Moszkowicz, 2001).

The interest in the issues related to organisational culture, and an attempt to identify the cultural patterns most popular in the West Pomeranian enterprises as well as the extent to which they might be affected by the heritage of the previous system have inspired the author to conduct empirical research.

Aim and subject of the research

The aim of the research was to diagnose the organisational culture in order to identify the characteristics of organisation cultures adopted by the analysed entities, and the changes in cultural patterns which took place over the 7-year period between the two projects. To provide a comprehensive assessment of the phenomena observed, the subject of the research was approached from three aspects: strategy, organisational structure and human resources management. The literature of the subject usually emphasizes the relationship between organisational culture and strategy or structure as determinant of whether the company not only survives but also grows (Sikorski, 1992). Of no less importance, from the perspective of cultural analysis of companies, seems to be human resource management as its most clear sign and the major determinant at the same time (Listwan, 1999).

Strategy

Strategy of an enterprise, as application of the management process, characterises the position of the enterprise in an economic, technological and socio-political context thus allowing its existence and development in a changing environment as well as achievement of goals. If the existing variant fails to meet those

assumptions, it should be replaced by another more development-oriented one. It involves modification of a number of behaviours, and very often also a general reevaluation of the strategy. The search for realistic strategic options should not be based solely on the analysis of the external environment but it should also account for the internal potential. An important determinant of the shape and implementation of the strategy is the organisational culture. Being an element of strategic choices, it should support the achievement of goals (Aniszewska, 2000). When developing a strategy, it is essential to incorporate in it the attributes of the existing organisational culture. The guidelines and objectives set by the strategy should be consistent with the values and norms of the organisation's members or else the implementation of the strategy might face problems. In this way the organisation's mission may be stated and next steps of developing a strategy may be made – clear definition of the objectives and vision. At this stage of developing a strategy, organisational culture constitutes a certain "filter" which allows identification of hardly feasible strategies. On the other hand, such a precautionary approach may lead to simple copying of old patterns and it might discourage innovative solutions. It follows that the impact of organisational culture on the implementation of strategy can be either supportive or impeding. As a result, it is important to harmonise the interrelations between culture and strategy so that the organisational culture in the enterprise supports the implementation of the desired strategy, and in the case of new solutions – forms a basis for their acceptance. In order to popularize the desired rules of the strategy, it is very often essential to reevaluate the current norms and principles, or create new behaviour patterns and mechanisms promoting their implementation so that the employees, aware of the attractiveness of those patterns, could find their ways to adopt them (Łucewicz, 1994).

Organisational structure

The culture should be treated as a determinant of the organisational structure of the company as it is a base for various concepts of the structure, their implementation and good performance (Piotrowicz, 2002). The structure is optimal when people are provided an environment supporting efficiency of operations, provided, however, that

the structure is not entirely culturally unfamiliar (Warnecke, 1999). Organisational structure, being the formal expression of the objectives and methods of achieving them and ensuring efficient implementation of the mission statement and strategy should be a reflection of the goals and behaviours desired from the viewpoint of the organisational culture. If they are not in harmony, the enterprise may be facing a huge area of informal organisation.

Human resources management

Organisational culture determines also the process of human resources management. It concerns all the aspect of the HR process, starting from appropriate selection and recruitment (also for managerial posts) according to the qualities desired and consistent with cultural patterns of the organisation to accelerate or develop the desired culture. Knowledge of the organisational culture enables also the development of a motivation system which would prove the most efficient in the organisation and would have a positive impact on the performance, organisational efficiency, satisfaction from work and involvement.

The control and assessment system based on cultural patterns provides information about the quantity and quality of work, allowing identification of how the employees achieve the results expected by their superiors, and providing information on how to improve efficiency. Organisational culture contributes to the simplification of numerous procedures (Misiotek, 1994) and thus to better efficiency of task performance. It also supports the improvement in communication skills and obedience to organisational rules, not necessarily those formal ones. Those rules are popularized in the process of socialization and learning, which involves employees thus contributing to their integration (Łucewicz, 1994). Organisational culture explains and interprets various situations and events, mitigating the related uncertainty and fears. Shaping of appropriate cultural patterns increases the flexibility of activities and adaptation to changes. The organisational culture accepted by employees protects the organisation from numerous conflicts which might affect the satisfaction from work or discourage involvement (Olejniczak, 1991), and if a difficult situation or argument arises, the behaviour patterns will help to find the right solution.

A high level of organisational culture can be measured with the ability to develop such cultural patterns in all the three areas (strategy, structure, human resources management) that meet the organisation's long-term objectives and at the same time they manage in a natural way the qualities of the community and the attributes of its environment.

Research method

The research was carried out in two periods: in 2001 – to identify cultural patterns, and in 2008 – to verify the hypothesis that organisational culture has undergone significant changes. In 2001 the sample included 150 enterprises out of 480 invited to the research, and in 2008 – 100 out of 508, respectively.

The research focused on medium-sized and big enterprises operating in the West Pomeranian Province in Poland. The size of the company was determined by the number of its employees (above 50). The selection of this group of entities was related to the fact that medium-sized and big enterprises, unlike small enterprises where organisational culture still reflect the values and attitudes of their owners, had already had the opportunity to develop and reinforce certain behaviours. The selected enterprises were invited to participate in two ways: first a letter was sent, and later it was followed by a phone call. The research instrument was a questionnaire developed by the author, based on closed (52%) and semi-open (48%) questions. The questionnaire concerned the three above-mentioned areas of analysis: strategy, organisational structure and human resources management. The questions concerning strategy addressed mainly such issues as the mission statement and objectives of the enterprise and current implementation of the strategy; within structure – there were forms of work, delegation of authority and changes in the structure; in human resources management – selection of employees, motivation, control and evaluation of employees. The questionnaire was addressed to the top management due to their knowledge of the processes taking place in the entire enterprise, its norms and values and the role of that knowledge in shaping and developing organisational culture. In the next stage, managers of more than 30% of the analysed enterprises were interviewed. It provided additional information

and contributed significantly to the quality of the research material.

In order to identify the relationship between the cultural patterns desired by the enterprise and the year of research, the chi-square independence test, very popular in qualitative research, was employed at the $\alpha = 0.05$ significance level. The methods used have proved the existence of a significant relationship between the cultural patterns desired in the enterprise and the year of the research, which implies that cultural patterns in the analysed enterprises have undergone changes.

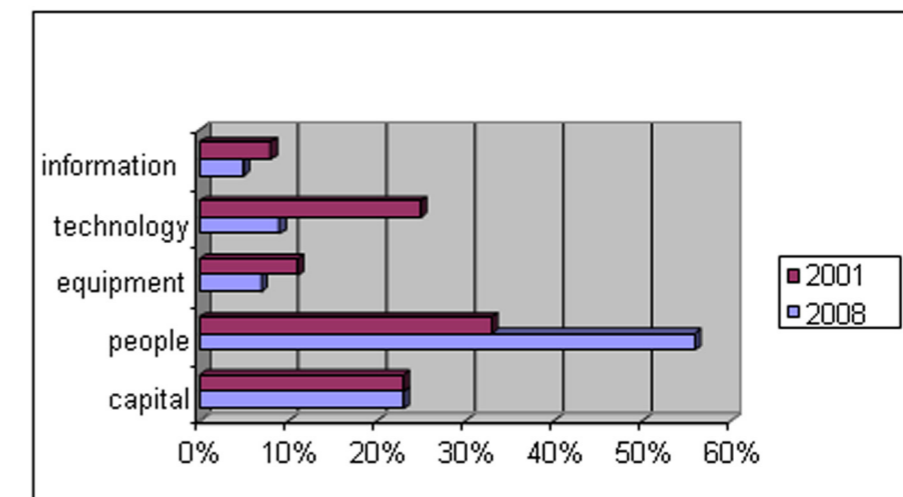
Characteristics of organisational culture in the analysed enterprises – research results

The results reveal increasing awareness of the importance of strategic management among the management staff of the West Pomeranian enterprises. The strategies developed by them

are usually dynamic and focus on finding ways to provide more development opportunities.

The assumptions and objectives formulated in the strategies of the analysed enterprises indicate that to a great extent those entities are oriented at profitability, financial liquidity, improvement in quality or customer satisfaction. Similar results within the strategic objectives of Polish enterprises were obtained by P. Banaszyk (1997) and Z. Kędzior (1997). The relevance of employees' satisfaction seems to be unsatisfactory even though the key resources point to human resources as the most important ones in the organisation. Moreover, their relevance to efficient performance of the enterprise has increased in relation to the year 2001, which is presented in Fig. 1. The analysed enterprises value also very high the financial capital. Such a structure of responses has also been found earlier by M.J. Stankiewicz and S. Sudół in their research into competitive potential of enterprises (Stankiewicz, Sudół, 1999).

Fig. 1. Key resources in an enterprise.



Source: own study

High relevance of human resources is related mainly to the fact that it is those resources that the analysed enterprises lack most. The major concern of the West Pomeranian entrepreneurs (except for unstable economic conditions and legal regulations) is the migration of highly qualified employees to other cities, such as Warsaw or Poznan, which offer more attractive conditions, and recently also the migration abroad, following the opening of many European labour markets to Polish citizens. The lack of appropriately qualified and motivated staff is frequently emphasized by management staff during interviews, who point to this problem as a potential threat for the continuation of their operations. The managers are very often aware of the impact of individual resources, especially human resources, on the quality and efficiency of operations of their organisations. In this aspect their awareness has significantly improved.

The approach of the analysed enterprises is usually open. Changes are perceived as a natural element of an enterprise's operations (65%), and more often are considered a source of opportunities rather than threats. It is reflected in the above-average level of tolerance of uncertainty and risk in the organisation's life. Among employees the reluctance to change is more and more often replaced by the awareness and understanding of their necessity, and aversion and reluctance related to change in certain areas of activity, such as HR policy, are overcome by application of appropriate incentives and methods. More than a half of respondents (55%) declare that they can win employees' acceptance by applying appropriate measures.

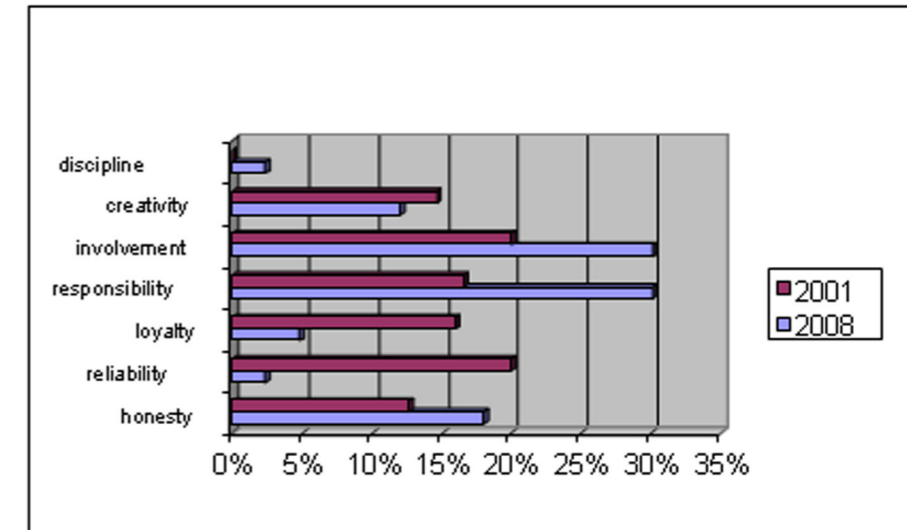
Within organisational structure, the analysed enterprises use different solutions. The analyses reveal that the majority (52%) use a variation of the structure somewhere between total hierarchy and flexibility, based on teamwork. Such an approach implies at least partial delegation of authority and suggests more participation of employees. The latter is usually understood as recognition of the problem and development of optional solutions, whereas the selection of the right option is still the responsibility of the management. It is also an indication of more independence in activities, which promotes creativity and initiative. According to the research into the characteristics of Polish enterprises quoted by K. Krzakiewicz

(Krzakiewicz, Milner, 2001), there is a paradox in the practice of Polish enterprises. On the one hand, clear pursuance for reducing inequality (opinions concerning privileges vary with the place in the hierarchy – the higher the position, the more approval of them) can be observed whereas on the other the employees are expecting clear instruction and hierarchisation. Otherwise they feel insecure since they lack independence, and fear risk and responsibility (Glińska-Noweś, 2000). The attitudes of employees, however, tend to show more involvement and participation which is an opportunity for faster adaptation to changes whose dynamics in a way requires more flexible solutions. The concern for developing a desired organisational culture in 77% of analysed companies has led the management to create the image of a potential employee hired for a certain post, in line with the enterprise's values and principles. Such compliance reinforces the values and organisational culture and allows introduction of new, more progressive values thus modifying the present organisational culture. The issues concerning the system of values constitute criteria for candidate selection in merely 4% of cases. Over a half of the analysed entities, while hiring new employees, consider mainly their qualifications. Among the most valuable attitudes and qualities of employees, the respondents listed mainly responsibility, involvement and honesty, which has been presented in Fig. 2.

High pressure on responsibility and involvement of employees encourages more self-control (42% of enterprises) and requires from employees more activity, ensuring at the same time more freedom and independence in activities.

In the process of motivation, mainly financial incentives are used, i.e. raising or decreasing the salary (30% of respondents) and bonuses (32%). The same tendencies have been found by A. Lozano (2001) and H.T. Hryniewicz (2002). The initiative in searching for new solutions or methods is valued and rewarded (66% of enterprises), and employees are offered more independence. The analysed companies enjoy good communication – as many as 77% of respondents report that their communication system is operating efficiently in the entire enterprise. As a result, employees have access to all the information essential for task performance (97%).

Fig. 2. Most desired attitudes of employees.



Source: own study.

Table II. Key changes in organisational culture

Issue	Chi-square test	p
Priorities	21.117	0.004
Key resources	15.122	0.004
Type of organisational structure	8.8767	0.012
Communication system	15.072	0.000
Approach to change	18.363	0.000
Use of candidate profile while hiring new personnel	5.0701	0.024
Recruitment criteria	21.075	0.000
Financial incentives promoting innovativeness and risk taking	160.65	0.026
Desired attitudes	29.373	0.000
Desired values	13.056	0.004

Source: own study

The West Pomeranian companies can also boast good atmosphere which supports the identification with the company and integration initiatives. The key value to 60% of enterprises is cooperation. Among employees, higher independence and responsibility for tasks, performance and equipment is observed, which is accompanied by another important factor – more respect to the customer. In spite of a significant change in attitudes, there are still employees who are passive, show no initiative, or are reluctant to involvement in the enterprise's activities, and simply perform the tasks assigned.

Changes in organisational cultures

An analysis of the research results obtained for the years 2001 ad 2008 proves that over those seven years dividing the two research projects cultural patterns in the West Pomeranian enterprises have undergone significant changes. The key issues where statistically significant changes have been observed are presented in Table II.

The changes in relation to the situation diagnosed in 2001 can be observed in all the analysed fields. Within strategy they concern mainly the hierarchy of objectives of the West Pomeranian enterprises. The analysed entities more often concentrate at the moment on generating profits and assuring financial liquidity rather than customer satisfaction, not to mention environmental protection. It means that they are more concerned about the objectives which have results visible in a relatively short period of time. The major reason for such a hierarchy of objectives can be traced back to unstable socio-economic environment of the West Pomeranian Province where the companies were operating. Such factors as lack of a consistent regional development policy, no initiatives promoting development, unfavourable structure of enterprises, frequently mentioned in the questionnaires, have affected the adopted approach and shifted the focus from future to current activities. The change of local authorities and related change in the socio-economic policy of the region, stabilization of macro-conditions and increasing awareness of the relevance of various stakeholders to efficient operations of enterprises provide an opportunity, however, for concentrating on long-term objectives such as stakeholders' satisfaction in general, and customers' and employees' in particular.

The changes observed affected also the type of organisational structure, indicating mostly to a mixed variant between strict hierarchy and totally flexible organisational structure, unlike the previously equally frequently quoted types of structure: hierarchical, flexible and mixed. The analysed entities still lack practice in organizing team working for individual tasks. It is related to the fact that employees were used to perform strictly defined tasks without interacting with other cells. It should be noted, however, that more concern about an efficient communication system and information flow is also observed.

Within human resources management, the changes are reflected in many aspects. First and foremost, the role of employees has significantly risen as the key resource of the enterprise. They are more frequently appreciated and perceived as a source of competitive advantage, so more and more enterprises (as compared to the research carried out in 2001) develop and use the profile of a potential employee to make sure it meets the cultural profile of the enterprise. The emphasis in verification of candidates has been shifted from age, education, personality and qualifications to mostly qualifications and experience. More frequently the incentives used stimulate innovativeness and risk taking, and the changes in the system of values and attitudes indicate the rising relevance of cooperation and initiative.

The changes observed should be related to the revaluation of determinants of competitive performance made by management staff. Opening of the West European labour markets to Polish citizens and related emigration, usually of young and qualified people have attracted the attention to human capital. Of no less importance is the change of generation among the management staff – at present they recruit from people whose education has already included the models of management in a market economy. Poland's access to the European Union and its full participation in the freedom of economic activity has even more contributed to the implementation of solutions transferred from foreign enterprises with long traditions of efficient organisational cultures. Learning from their experience, especially when they began their operation in Poland, has inspired the management to intensify the exploration of the so-called "soft" factors and a variety of management tools, especially

those within organisational culture. Learning from the experience of other (usually foreign) entities, more awareness of the relevance of human resources and their impact on the efficiency of operations, better knowledge of management methods and techniques as well as better access to government projects promoting human resources development (e.g. training) support the development of organisational culture oriented at raising competitiveness of enterprises. The changes in organisational culture of the analysed enterprises have been significantly affected also by: the changes in the structure of employees by age (more and more young people, raised and educated in the market economy), as well as inflow of many new (young) enterprises designed so as to include the market-oriented norms and values. As a result, we are witnessing more and more often such attributes of organisational culture as cooperation, responsibility, involvement, efficient communication, flexibility, adaptation to change and anticipation of future changes in the environment or initiative. Those transformations follow a path characteristic of the leading domestic enterprises as well as that of established organisations in developed markets.

Conclusion

The results of two research projects, carried out in 2001 and 2008, indicate that organisational cultures of the analysed entities have undergone significant changes. They should be considered favourable as they raise, among others, the importance of human resources and other factors such as: strategy consistent with the organisational culture of the enterprise, appropriate organisational structure which reinforces the desired cultural patterns, and HR policy oriented at development of the existing or new desired culture. Efficient communication and information flow, a recruitment system oriented at the profile of a desired employee, appropriate motivation tools promoting initiative and risk taking, or an open approach to change in the enterprise comprise all the major attributes of the West Pomeranian enterprises at the moment.

Even though the research has shown positive transformation of cultural patterns – as seen from the perspective of improved competitiveness – it does not imply, however, that it is entirely satisfactory. Without a doubt, there is still plenty to work on in

this aspect. First of all, only patterns which support the development of knowledge and promote innovativeness should be developed. In today's economy, innovativeness based on knowledge and its creative use are the best ways to construct a strong and stable enterprise. It seems that not only the West Pomeranian, but also generally Polish enterprises have still plenty of work ahead in this aspect. The heritage of the centrally planned economy has not been entirely eliminated yet and the existing organisational structure does not completely support knowledge and innovativeness. It is also noteworthy that following the integration and globalization processes and related flow of work force, organisational culture of enterprises becomes more diverse. It requires knowledge of how to manage a culturally diverse enterprise and how to shape a culture, given the existing differences, which would support the efficiency of operations. More awareness among management staff of the relevance of organisational culture to creating competitive advantage seems to be a good omen.

The changes observed let us evaluate the development of desired cultural patterns as positive. Even though they are still undervalued in Polish enterprises, as compared and contrasted to developed countries, we are definitely witnessing favourable changes in this field. It allows a conclusion to be reached that West Pomeranian enterprises enjoy a great development potential as long as they raise or at least maintain the present tendency within the relevance of organisational culture to management, especially in the context of improvement in competitive performance.

Questions

1. What impact should the changes observed in the organisational culture have on the strategy, organisational structure and HR policy in the analysed enterprises?
2. How would you evaluate the changes in the organisational culture of Polish enterprises?
3. What is the desired direction of changes in the culture of Polish enterprises?

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THE EVIDENCE ON MARKET ABNORMAL RETURNS IN ACQUISITIONS ON THE WARSAW STOCK EXCHANGE

AGNIESZKA PEREPECZO
UNIVERSITY OF SZCZECIN

KATARZYNA BYRKA-KITA
UNIVERSITY OF SZCZECIN

Abstract

The transition process in Polish economy and creation of a capital market were the starting point for consolidation of Polish companies. The status of the Warsaw Stock Exchange as an emerging market implies, however, a lower number of mergers and acquisitions in comparison to the developed markets. Over the several years of quoting on WSE, a number of mergers of state-owned/public enterprises were successfully completed. With reference to acquisitions, the number of transactions was much higher, but the role of acquirer was played mostly by a foreign firm and that of the target company – by a domestic one.

The published results of market abnormal returns in developed markets show positive values for shareholders of acquired (target) companies and much lower or even negative ones for shareholders of acquirers.

The paper provides evidence on abnormal returns performance in acquisitions on the Warsaw Stock Exchange. From a variety of measures, the authors chose the event study methodology, used in developed markets to evaluate post-acquisition performance and based on the market data, and Cumulative Average Abnormal Return (CAAR). The research sample has included acquired (target) firms quoted on the Warsaw Stock Exchange and selected according to the open market share repurchase announcement in 1998-2004 as one of the formal ways of acquisition offer. The research study has focused on short-term abnormal returns (60 days before and 60 days after bid announcement).

The evidence leads to the conclusion that positive reaction of investors to bid announcement on Polish market is similar to the reaction of investors on developed markets, and results in positive abnormal return for shareholders of acquired (target) firms. However the results obtained for individual sectors do not allow to draw unambiguous conclusions and indicate that abnormal returns for shareholders of acquired (target) firms are sensitive to the adopted model of evaluation.

Keywords: Poland, mergers; acquisitions; restructuring; strategy, corporate governance, event study, market abnormal returns.

Introduction

Mergers and acquisitions are relatively new to Polish public and private companies, especially when we consider the short history of Polish capital market, still classified as an underdeveloped one. For those reasons, the experience measured with the number of M&A transactions and their total value is not so rich as in developed markets. The joint-stock companies have been involved in M&A transactions usually as target companies and so far only in few cases Polish companies have been the acquirers themselves. This situation has affected the object of this research implying that in the analysed period abnormal returns in the Polish capital market could be measured mainly for target companies.

Apart from the above, there is another, more essential limit to the estimation of abnormal returns – relatively short time series for prices of those shares, which is related to the short history of the market. The target companies were usually companies with a short record in the Warsaw Stock

Exchange or companies which were withdrawn from public trading by their acquirers. As a consequence, estimation of abnormal returns earned by shareholders of target companies is possible only in a short period in relation to the bid announcement day, yet at the moment of conducting this research it eliminates evaluation of long-term financial effects of mergers and acquisitions.

The determinants of M&As in the Polish capital market presented in this study, with potential constraints of the research taken into consideration, indicate that they vary from the determinants present in developed markets. A question arises therefore whether the market-related effects measured with abnormal returns earned by shareholders of target companies also vary from those observed in developed markets. Do different conditions imply different financial effects? The answer to this question will be found in this paper. The aim of this article is to present the research into abnormal returns generated in acquisitions by target companies in the Polish capital market over the years 1998-2004 and to evaluate the results against those obtained for developed markets.

Overview of research into abnormal returns for target companies in Poland

In the Polish literature, there are definitely fewer studies dealing with market effects of mergers and acquisitions than in the developed markets. The results of research studies into abnormal returns earned by shareholders of target companies, which have been carried out so far, seem to indicate that different determinants of the M&A market in Poland imply less financial benefits for shareholders of the merging entities.

The first research into abnormal returns as a reaction of the Polish capital market to a bid announcement was carried out by Lewandowski (2001). The analysed population comprised 63 open market share repurchases announced between the end of 1998 and mid-2000. In the (-5, +5) interval, the cumulative abnormal return was slightly over zero, at the level of 2.62%. In the second interval, it was still lower, amounting to 1.47%. The author does not provide any information on the significance level. The results obtained indicate that the reaction of the Polish

stock market to acquisition of shares is much weaker than in developed markets, which is reflected in low abnormal returns. Moreover, a few days after the announcement is made, the returns decrease, unlike in developed markets, where returns remains stable when the transaction is completed.

Next research study exploring investors' reactions to open market share repurchase announcement was carried out by Szyszka (2002). The sample included 75 open market share repurchases in the years 1997-2000 in the Warsaw Stock Exchange. Szyszka verified statistical significance of the results obtained. He arrived at the ACAR measure at the level of 10.4% in the observation window. It is a value higher than that obtained by Lewandowski in his research, yet still below the figures recorded in developed markets. Moreover, in mature markets the highest increase is usually reported for the event moment, which often accounts for around 50% of abnormal returns. The results quoted here indicate that in the case of the Polish market the bid announcement accounts for slightly more than 25% of ACAR. There are, however, similarities to developed markets – just before the announcement ACAR rises to slightly fall immediately after the announcement has been made and then become stable.

Another researcher who evaluated market effects of mergers in the Polish market was Machala (2005). His sample size was the smallest. The author calculated abnormal returns for 12 mergers and acquisitions of listed companies for bid announcements made in the years 1996-2002 in initial public offering. The analysis involved both parties of the merger. Average abnormal returns calculated with the market model indicate to positive returns earned by shareholders of merging companies, at the average level of 3.18%. For acquisitions, an average 35.56% profit is observed for shareholders of the target company, whereas shareholders of the acquirer lose 8.56% on average. Generally, similar conclusions can be reached after an analysis of the results obtained in the developed markets. It should be noted, however, that from the statistical point of view the population observed can be treated as not representative. The study does not contain any information about the statistical verification of the results.

Selection of the sample

Control over a joint-stock company in the Polish capital market in the years 1998-2004 was taken in two ways. The first involved acquisition of a large number of newly issued shares, the so-called control block, and the second – acquisition of large blocks of shares in the secondary market, i.e. from their former holders. Both solutions have been used in Polish practice. The latter has been subject to detailed regulations and has a form of open market share repurchase.

The identification of acquisitions of Polish companies in the form of issuance targeted at a certain shareholder, the so-called strategic investor, is possible yet the definition of the reference point as the bid announcement day raises problems since the announcements are published by different newspapers on different dates. Due to detailed regulations of the open market share repurchase institution, setting the date of bid announcement is much easier. Since 1999 the Yearbooks published by the Warsaw Stock Exchange, providing the data for individual years, have included the information about open market share repurchase announcements. An initial analysis indicates that in most cases acquisition was preceded by such an announcement. It will not be wrong therefore to assume that the listed companies were acquired through open market share repurchase. Such an assumption had already been made by Lewandowski and Szyszka in their researches into abnormal returns.

Taking into account the short history of Polish capital market and the institution of open market share repurchase, and – above all – the recent M&A activities in the world, the analysed population comprised public companies for whom open market share repurchase was announced in the years 1998-2004. The list of announcements made in 1998 was defined by means of an electronic information service provided by the "Parkiet" stock exchange newspaper. Announcements made in the following years were compiled basing on the data published by the Warsaw Stock Exchange in its Yearbooks (Rocznik Giełdowy 2000; Rocznik Giełdowy 2001, Rocznik Giełdowy 2002, Rocznik Giełdowy 2003, Rocznik Giełdowy 2004, Rocznik Giełdowy 2005, Warsaw Stock Exchange). It was discovered that the number of open market share repurchases completed in the whole period of analysis totalled 226.

The initial list of open market share repurchase announcements was verified.

Generally, for methodological reasons, the companies that failed to meet the following conditions were excluded from the initial list:

- the distance in time between the first and second open market share repurchase announcement for the same company had been at least six months,
- the company had remained listed at least three months following the announcement date,
- the company had been listed for at least 12 months preceding the announcement date.

Verification of the companies allowed identification of 144 eligible cases of open market share repurchase in the years 1998-2004. Abnormal returns were estimated on the one hand for the whole sample of 144 cases and on the other – for the sample broken down into sectors. Target companies were classified to subgroups according to the sector classification used by the Warsaw Stock Exchange.

Methodology of research

Evaluation of financial effects of acquisitions taking place in the Warsaw Stock Exchange, based on the market data, was carried out according to the event study methodology. This methodology is used to evaluate the effect of certain event on shareholder value, reflected in the growth in abnormal returns earned by shareholders representing both parties, as a difference between the real return generated in the observation period and the expected return on given share. The expected return on a share should be understood as a "simple" return which could be earned if the event did not occur.

When evaluating financial effects of mergers and acquisitions, the event study is used mainly to identify additional profits and losses. To measure them, abnormal return is calculated as the relationship between profits earned by shareholders of the acquiring or target company in the event window and the "simple" returns from the period when no effects related to the event were reported. Abnormal return for company *i* is calculated as actual less expected return on the

share of company *i* over period *t*, as in the following formula:

$$AR_{it} = R_{it} - E(R_{it})$$

where:

AR_{it} - abnormal return for company *i* over period *t*;

R_{it} - return for company *i* over period *t*;

E(R_{it}) - expected normal return for company *i* over period *t*;

t - day or month, depending on the data accepted for calculations and unit of the event window.

If abnormal return for stock *i* in the event window *t* is greater than zero, the acquisition generates wealth for investors holding shares in company *i*. If abnormal return equals to zero, the effect of acquisition is neutral in terms of shareholder wealth. Negative abnormal returns imply losses for shareholders. Depending on the character of returns – whether they are daily or monthly – the abnormal return AR_{it} becomes a daily or monthly abnormal return for stock *i* over period *t*. In the study, to identify the short-term profits and losses for investors holding shares in target companies, abnormal returns were calculated with reference to the day of open market share repurchase announcement, *t*=0. The event window spanned over 120 days – 60 days before and 60 days after the announcement date (-60, +60), with a day within the analysed interval being understood as the actual day when shares of the analysed companies were traded.

Abnormal returns in the event window are based on the Cumulative Abnormal Returns (CAR) measure, which is widely used in short-term event study. Cumulative Abnormal Returns for the whole population and for individual groups of that population, representing different sectors, were calculated basing on the daily data in the following way. First the sum of cumulative abnormal returns (CAR_{it}) was estimated for shares of each company *i* on day *t*. The sum was then averaged to arrive at the average abnormal return for all the analysed

shares for each day *t* in the interval between 60 days before and 60 days after the event:

$$AAR_t = \frac{1}{N_t} \sum_{i=1}^{N_t} AR_{it}$$

where:

AAR_t - average abnormal returns for all the analysed shares in period *t*;

N_t - number of shares in total population (144) or the analysed subgroup in sectoral breakdown;

AR_{it} - abnormal return for share *i* on day *t* in the (-60, +60) event window.

Next, the daily average abnormal returns were summed up for the whole event window (-60, +60) and for individual intervals (*t*₁, *t*₂), as in the equation:

$$CAAR_{t_1}^{t_2} = \sum_{t=t_1}^{t_2} AAR_t$$

where:

CAAR - cumulative average abnormal returns;

*t*₁ - starting day of observation window;

*t*₂ - ending day of the window;

AAR_t - average abnormal returns for all the analysed shares in period *t*.

To obtain abnormal returns for stock *i* on day *t* (AR_{it}), first the actual daily returns for each target company in the interval (-60, +60) were calculated. Since in the whole observation period only several companies were paying dividends to their shareholders, and their amounts were insignificant, the daily return on shares *i* on day *t* did not include the dividend, as in the following formula:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

where:

R_{it} - daily return on share i on day t;

P_{it} - price of share i on day t;

P_{it-1} - price of share i on day t-1.

Next, expected returns were calculated. At this stage, several solutions can be applied. Sudarsanam (2003) has identified seven models where expected returns are calculated: mean-adjusted model, market-adjusted model, market model, Capital Asset Pricing Model, Fama and French Three Factor Model, reference portfolio, control firm. In the literature on the subject, there are still more solutions to estimating expected returns, referring to market models.

Not all of the above-mentioned solutions can be applied to the analysis of abnormal returns in the Polish capital market. The first condition which should be met in the event study methodology is market efficiency, which is important particularly in estimation of expected return in market models. When analysing the next models, in certain cases additional constraints appear which exclude the applicability of a given model in Polish conditions.

The mean-adjusted model and the market-adjusted model do not require any additional assumptions which would limit their employment. The only condition is long enough time series for prices of the analysed shares with reference to the observation window and the independent period. The reference portfolio and the control firm models are methodologically similar to the market-adjusted model. While calculating the average for a portfolio it would be advisable to include a large number of shares to consider the "simple" returns as representative. Constructing a portfolio for all the analysed companies, taking into account their profile and relation of book to market value, is not an easy task, though, as there are many constraints. In mature markets where the number of listed companies is several times higher than in the Polish capital market, it is feasible to construct

representative portfolios, while in developing markets with a low number of listed shares it is much more difficult. The key constraint here is again the time series of price quotations for shares comprising the portfolio. In such a case it seems easier to use the control firm model. It implies, however, that each analysed entity should be matched to a company with a similar profile and long enough time series. In the light of a small number of listed companies, it is impossible to carry out such matching.

Most constraints refer to the applicability of market models: the Sharpe's model, CAPM model, and the Fama and French model. Their employment is conditioned by meeting the market efficiency requirement. Universally it is believed that Polish capital market does not meet all the conditions of an efficient market (Jajuga, 2000). The research into stability of the beta coefficient over time indicates (Rozkrut, Byrka-Kita, 2006) that this condition is not met in practice, like several other conditions described above. Moreover, the assumption about a linear character of the relationship between expected return and market return seems to be oversimplified (Tarczyński, 1997), which is proved also by the results of verification of the Sharpe's model obtained in this research study. Still more constraints related to constructing appropriate portfolios and estimating additional beta parameters are present in the Fama and French model.

It can be assumed, however, that in developed markets the market efficiency requirements are not met either (Haugen, 1999), yet in practice of their stock exchanges, the Sharpe's model proves highly useful among all markets models, and its indications should be considered reliable (Tarczyński, 1997). This conclusion has also been proved by research into financial effects of mergers and acquisitions carried out in developed markets.

Taking the above constraints and applicability of individual models into consideration, in this study three models were employed to estimate expected returns: the mean-adjusted model, the market-adjusted model and the Sharpe's market model.

Results of abnormal returns estimation for the whole population

The cumulative average abnormal returns estimated in the three models for the entire

population of 144 open market share repurchases differ slightly. In the whole observation window (-60, +60) the CAAR measure reaches the lowest level of 20.67% for the market model, 21.26% for the mean-adjusted model and the highest 25.93% level for the market-adjusted model. Those results indicate that shareholders of target companies acquired in the Polish capital market earn profits in the adopted observation window.

Moreover, the figures for individual sub-periods indicate that the highest increase in profits is observed in the period preceding the open market share repurchase announcement. Depending on the model, the CAAR measure in the (-60, -1) ranges from 15.67% to 19.33%, and more precisely, nearly 50% of that increase is recorded 20 days prior to the announcement date. In the (-20, -1) interval the abnormal returns earned by shareholders of target companies reach in the three models 7.18%, 9.17% and 7.64%, respectively.

Those results indicate that the market expects acquisitions, and the closer the bid announcement, the more intense rise in share prices and returns. It should be noted, however, that the open market share repurchase has been precisely regulated in the legal system, and acquisition of a large block of shares requires earlier permission of the Securities and Stock Exchanges Commission. For this reason, bid announcement comes as no surprise to shareholders. They expect it and the permission granted by the Commission is an initial announcement of the bidder's intentions.

In the analysed event window following the open market share repurchase announcement, cumulative average abnormal returns are much lower than in the period preceding the event. In the (0, +60) interval, the CAAR measure amounts to: 5.59% in the mean-adjusted model, 6.60% in the market-adjusted model, and 4.66% in the market model. Definitely the highest increase in this event window is observed immediately after the bid announcement, i.e. in the (0, +1) period. Abnormal returns reach 3.96% for the market-adjusted and market models, and 4.26% for the mean-adjusted model. In the next two sub-periods, (+2, +20) and (+21, +40), CAARs for two models oscillated below zero, except for the market-adjusted model, where abnormal returns slightly exceeded zero to reach

0.36%. In the last observation sub-window, (+41, +60), the cumulative average abnormal returns were again positive for all the three models, reaching 2.64%, 3.12% and 2.32%, respectively.

To verify statistical significance of the results obtained, following the example of solutions applied in developed markets, the traditional parametric t-test (Lyon, Barber, Tsai (1999)) was carried out. The null hypothesis said the average of cumulative abnormal returns in the (-60, +60) interval equaled zero for the entire population (144 observations). The values of statistics for all the three models were statistically significant at given alpha = 0.05. However, none of the models met the normal distribution requirement, and so the results of this parametric test cannot be recognised. As a consequence, a non-parametric test followed – the Wilcoxon test. The null hypothesis claimed that the difference between the medians of cumulative average abnormal returns in periods (-60, -1) and (0, +60), respectively, equalled zero for the entire population. The Wilcoxon T-statistic was significant for all the models at the following levels of p: 0.025378 in the mean-adjusted model, 0.002204 in the market-adjusted model, and 0.000239 in the market model. Provided the α = 0.05 significance level, the hypothesis about equality of distributions had to be rejected. Basing on those results, we can conclude that cumulative average abnormal returns in the period preceding the open share market repurchase announcement differ significantly from the values obtained for the post-event period. A number of reservations can be made about the Sharpe's model employed to estimate the expected return. Polish capital market does not meet its basic requirements which is reflected in the results of the statistical verification of the model for individual companies. Nevertheless, abnormal returns obtained with the market model are considerably close to those obtained in the other two models, and the results before and after the open share market repurchase announcement are statistically significant. For this reason, even though the requirements of an efficient market are not met, the Sharpe's market model seems to be useful to measure the profits earned by shareholders.

Table 1. Cumulative average abnormal returns in observation periods for target companies acquired through open market share repurchase in the Warsaw Stock Exchange in the years 1998-2004

Observation period (t ₁ , t ₂)	CAAR (Mean-adjusted model – Model I)	CAAR (Market-adjusted model – Model II)	CAAR (Sharpe's market model – Model III)
(-60, +60)	0.2126	0.2593	0.2067
(-60, -1)	0.1567	0.1933	0.1602
(-60, -41)	0.0389	0.0474	0.0358
(-40, -21)	0.0459	0.0542	0.0480
(-20, -1)	0.0718	0.0917	0.0764
(0, +60)	0.0559	0.0660	0.0466
(0, +1)	0.0426	0.0396	0.0396
(+2, +60)	0.0134	0.0264	0.0070
(+2, +20)	-0.0054	-0.0084	-0.0110
(+21, +40)	-0.0076	0.0036	-0.0053
(+41, +60)	0.0264	0.0312	0.0232

Source: own study

The market abnormal returns for target companies acquired in the Polish capital market are governed by the same regulations as those in the developed markets. Shareholders of target companies earn significant, exceeding 20%, profits in the analysed event window. The highest increase is observed in the period preceding the bid announcement, which is followed by stabilisation. The evidence for similarities between Polish capital market and developed markets concerning tendencies in abnormal returns, which reflect the financial effect of bid announcement, is provided in the figures below, presenting cumulative average abnormal returns for individual models in the whole analysed event window. They reveal that abnormal returns in the whole event window are consistent with the observations made by Asquith and other researchers investigating market abnormal returns on shares of target companies.

Comparing the abnormal returns earned by shareholders of target companies estimated in the market model with the results obtained in earlier research studies into Polish capital market, significant differences in the levels can be observed, except for the most recent research carried out by Szyszka. In the case of Lewandowski's research, the cumulative average abnormal return in the

event window he analysed, (-30, +30), amount to 1.74% in the Sharpe's market model, whereas in this study this figure reached 11.88%, which is a huge difference. Such divergence was observed already at the level of the (-5, +5) sub-interval, where the difference equalled 2.93%, which may seem insignificant yet it accounts for as much as half of the return in this interval. Significant differences are also revealed when the results obtained in this study are contrasted with the research carried out by Machała. In that case CAAR in the market model in the (-40, +40) interval is nearly 21% lower than that observed by Machała.

The smallest differences in abnormal returns are observed while comparing and contrasting this study with the research carried out by Szyszka. For all the intervals which he analysed, i.e. (0, +1), (-1, +1), (+2, +10), (-30, +30), the difference between abnormal returns between the two studies reaches 1.96%, 1.26%, 1.39% and 2.56%, respectively. Moreover, when analysing the shape of the CAAR curve in the whole event window adopted by Szyszka, similar regularities can be found. In the interval preceding bid announcement CAARs rise, and in the period following the event they become stable.

Table 2. Comparison of results obtained with earlier studies into cumulative average abnormal returns (CAAR) for target companies acquired in the WSE

Observation period (t ₁ , t ₂)	CAARs (Model I)	CAARs (Model II)	CAARs (Model III)	CAARs	Difference (based on Model III)
Present study				M. Lewandowski	
(-5, +5)	0.0591	0.0614	0.0555	0.0262	0.0293
(-30, +30)	0.1198	0.1450	0.1188	0.0147	0.1041
Present study				A. Szyszka	
(0, +1)	0.0426	0.0396	0.0396	0.0200	0.0196
(-1, +1)	0.0514	0.0495	0.0486	0.0360	0.0126
(+2, +10)	-0.0030	-0.0040	-0.0051	-0.0190	0.0139
(-30, +10)	0.1294	0.1464	0.1296	0.1040	0.0256
Present study				R. Machała	
(-40, +40)	0.1473	0.1807	0.1477	0.3556	-0.2079

Source: own study

Results of abnormal returns estimation by sectors

The estimation of cumulative abnormal returns in sub-groups reveals that profits earned by shareholders of target companies vary with the sector. The highest returns are observed in the electro engineering sector, reaching for individual models 51.6%, 56.56% and 50.70%, respectively. Second highest returns are enjoyed by shareholders of target companies operating in other sectors, with CAARs amounting to 36.81%, 39.6% and 36.5%, respectively. The banking sector was next in turn with profits earned by shareholders of target banks reaching 20.37%, 18.03% and 17.55% in individual models. The lowest profits related to bid announcement, ranging from 6.34% to 10.95%, were reported for shareholders of target companies operating in the construction sector. The group of companies creating the lowest shareholder value included the following sectors: construction materials, food and National Investment Funds (NIF). In the case of those sub-sectors, however, the estimation with the market-adjusted model generates higher values than the remaining two models. Detailed results by sectors are presented in the tables below.

In most sectors, abnormal returns in the periods preceding an open market share repurchase

announcement dramatically rise, with the exception being the construction materials sector where the rise is relatively lower, at only 4.67%. After the event, i.e. after t=0, CAARs for the sectors: food, chemical, electro engineering, construction materials and other become stable. Different tendencies are observed for abnormal returns in the post-event period for companies representing the NIF, banking and construction sectors. In the case of NIF, in the period up to 20 days after the announcement abnormal returns plummet, which is followed afterwards by a dynamic increase in the CAAR measure. Decrease in the cumulative average abnormal return around 20 days after the announcement is also recorded for construction companies. In this case, however, further upward trend was not that dynamic as for NIF. A similar situation is observed for banks whose CAAR around the thirtieth day after the event plummeted to increase again afterwards. Those observations reveal that abnormal returns vary with the sector in which the target company is operating. It can be traced back, among others, to shareholders' reaction to certain event other than the open market share repurchase announcement itself, which also occurred in the event window and referred to the sector or one of the companies representing that sector. It seems highly probable especially given little sizes of the analysed subgroups.

Table 3. Cumulative average abnormal returns (CAAR) in the observation periods for target companies acquired through open market share repurchase in the WSE in the years 1998-2004 by sectors (Model I – mean-adjusted model)

Observation period (t ₁ , t ₂)	NIF	Food	Chemical	Banking	Electro engineering	Construction	Construction materials	Other
CAARs								
(-60, +60)	0.1067	0.0862	0.1143	0.2037	0.5160	0.0634	0.1004	0.3681
(-60, -1)	0.1064	0.0185	0.1134	0.1383	0.4704	0.1281	0.0316	0.2214
(-60, -41)	0.0440	-0.0530	-0.0132	0.0872	0.2390	-0.0095	0.0219	0.0389
(-40, -21)	0.0053	0.0089	0.0146	0.0433	0.1620	0.0574	-0.0475	0.0833
(-20, -1)	0.0571	0.0626	0.1120	0.0078	0.0694	0.0802	0.0572	0.0992
(0, +60)	0.0003	0.0677	0.0008	0.0653	0.0456	-0.0647	0.0687	0.1467
(0, +1)	0.0404	0.0543	-0.0064	0.0717	0.0146	0.0082	0.1190	0.0512
(+2, +60)	-0.0401	0.0133	0.0073	-0.0064	0.0310	-0.0729	-0.0502	0.0956
(+2, +20)	-0.1109	0.0115	0.0281	0.0051	0.0175	-0.0381	-0.0114	0.0307
(+21, +40)	0.0426	-0.0099	-0.0264	-0.0705	0.0115	0.0025	-0.0214	-0.0043
(+41, +60)	0.0282	0.0118	0.0057	0.0589	0.0020	-0.0373	-0.0175	0.0692

Source: own study.

Table 4. Cumulative average abnormal returns (CAAR) in the observation periods for target companies acquired through open market share repurchase in the WSE in the years 1998-2004 by sectors (Model II – market-adjusted model)

Observation period (t ₁ , t ₂)	NIF	Food	Chemical	Banking	Electro engineering	Construction	Construction materials	Other
CAARs								
(-60, +60)	0.1725	0.2006	0.1440	0.1803	0.5656	0.1095	0.1827	0.3960
(-60, -1)	0.1608	0.1059	0.1450	0.1484	0.4988	0.1373	0.0467	0.2497
(-60, -41)	0.0638	-0.0285	-0.0205	0.0627	0.2574	-0.0220	0.0033	0.0644
(-40, -21)	0.0081	0.0444	0.0406	0.0544	0.1581	0.0534	-0.0203	0.0730
(-20, -1)	0.0888	0.0900	0.1248	0.0314	0.0834	0.1059	0.0638	0.1123
(0, +60)	0.0117	0.0947	-0.0010	0.0319	0.0668	-0.0279	0.1360	0.1463
(0, +1)	0.0396	0.0462	-0.0115	0.0668	0.0211	0.0053	0.1349	0.0440
(+2, +60)	-0.0279	0.0485	0.0105	-0.0349	0.0457	-0.0332	0.0011	0.1024
(+2, +20)	-0.1092	-0.0021	0.0133	-0.0079	0.0122	-0.0210	-0.0111	0.0349
(+21, +40)	0.0406	0.0109	-0.0007	-0.0667	0.0336	-0.0065	-0.0420	0.0161
(+41, +60)	0.0407	0.0397	-0.0020	0.0398	-0.0001	-0.0056	0.0541	0.0513

Source: own study.

Table 5. Cumulative average abnormal returns (CAAR) in the observation periods for target companies acquired through open market share repurchase in the WSE in the years 1998-2004 by sectors (Model III – Sharpe's market model)

Observation period (t ₁ , t ₂)	NIF	Food	Chemical	Banking	Electro engineering	Construction	Construction materials	Other
CAARs								
(-60, +60)	0.1146	0.0857	0.1022	0.1755	0.5070	0.0696	0.0802	0.3650
(-60, -1)	0.1185	0.0332	0.1097	0.1255	0.4698	0.1249	0.0085	0.2345
(-60, -41)	0.0483	-0.0504	-0.0294	0.0773	0.2313	-0.0185	0.0082	0.0438
(-40, -21)	0.0076	0.0153	0.0245	0.0362	0.1615	0.0529	-0.0465	0.0869
(-20, -1)	0.0626	0.0682	0.1146	0.0121	0.0769	0.0906	0.0468	0.1038
(0, +60)	-0.0039	0.0525	-0.0075	0.0500	0.0372	-0.0553	0.0717	0.1305
(0, +1)	0.0393	0.0482	-0.0115	0.0684	0.0142	0.0050	0.1263	0.0470
(+2, +60)	-0.0432	0.0043	0.0040	-0.0184	0.0231	-0.0603	-0.0546	0.0835
(+2, +20)	-0.1119	0.0018	0.0205	0.0000	0.0111	-0.0303	-0.0198	0.0218
(+21, +40)	0.0386	-0.0113	-0.0146	-0.0644	0.0210	-0.0031	-0.0416	0.0030
(+41, +60)	0.0301	0.0138	-0.0019	0.0461	-0.0090	-0.0268	0.0067	0.0587

Source: own study

Conclusion

The analysis of aggregate results for the entire population provides evidence that shareholders' reaction to an open market share repurchase announcement is similar to the reaction of shareholders observed in developed markets. The profits are much higher than indicated in previous studies carried out for Poland. Shareholders of target companies enjoy short-term profits at the level of approx. 20 per cent or more, with most of them, like in the leading M&A markets, in the period preceding the open market share repurchase announcement. The verification of the cumulative average abnormal returns estimated for the entire population before and after the event prove statistical significance of the results.

The results by subgroups, on the other hand, reveal that abnormal returns vary with the sector. It is consistent with the results of research studies into the European market. Moreover, in this case, too, we can observe the sensitivity of results to the model of estimation of abnormal returns. Due to small sizes of subgroups, however, it was impossible to verify statistical significance of the results. For this reason, the above-presented findings should be considered a starting point for further research and exploration of reasons underlying the relationships observed in this study.

Questions

1. What are the limits to the estimation of abnormal returns realised by shareholders of the companies listed on the Warsaw Stock Exchange, and how do you think they will change in the future?
2. Please explain why only few models of expected returns can be applied in the current Polish conditions.
3. If you were a shareholder of a M&A target, would you be the winner or the loser in the M&A transaction?
4. If you were a shareholder of a M&A target, which sector would you prefer?

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THE SWAPS MARKET IN POLAND

AGNIESZKA MAJEWSKA
UNIVERSITY OF SZCZECIN

Abstract

The growth of financial market in Poland is related to the opportunity to use various instruments. Swaps are a financial innovation that has been used since year 1992. At the beginning those were only single transactions. Only after a few years later did they become used on a wider scale. As instruments of over the counter market they are adjusted to the individual needs of the parties of the transaction. Due to their construction, ways and conditions of use of contracts swaps allow to avoid many limits of options and futures contracts market

The main goal of this article is to present the growth of the swaps market in Poland and to give an example of its utilization by one of Polish stock exchange companies. As there function only three kinds of swaps: currency swap, interest rate swap, and currency interest rate swap, there will be no references to the other kinds of swap transactions. The analysis of the market will be performed on the basis of data held by National Bank of Poland. The example of use of swaps to hedging currency and interest rate risk will be presented on a case of Polish Telecom (TP SA).

Keywords: Poland, interest rate swap, currency swap, currency interest rate swaps, hedging

Introduction

The financial market in Poland has been developing since the beginning of the 90's of the 20th century. As the first, the market of inter-bank deposits developed and parallelly the Warsaw Stock Exchange was organized. With time appeared some new elements of the national financial market: the market of exchequer bills, the market of bonds, the market of options and others. The development of the national financial market occurred in the mid-90s when the number of transactions and the general scale of turnover began to grow rapidly. It influenced financial liquidity which is a sine qua non condition when using these instruments of the market in financial management.

In relation to the swap market in Poland the currency swaps appeared as the first ones. This was made possible by more liberal attitude to currency turnover. In turn, the continuous integration of the national financial market with the international market created for the national entities an access to the foreign markets of derivatives including interest rate swap, currency swap or currency interest rate swap. Both in Poland and abroad these are the instruments of over the counter market (OTC).

Because of the fact that the swap market in Poland is only developing until 2004 there was no research related to the degree of capital engagement in this market. Separate research had not been conducted, information was based on data obtained from the periodical reports of banks. In 2004 Poland for the first time participated in a full research of turnover in the market of over the counter derivatives. The coordinator of the research is The National Bank of Poland. The above research is part of international project conducted by Bank for International Settlements (BIS). The aim of the project is obtaining comprehensive and comparable statistical information about liquidity and structure of over the counter derivatives market and the currency market. Their research is conducted every three years together with national central banks within the project called Triennial Central Bank Survey on Foreign Exchange and OTC Derivatives Market Activity. In 2004 52 countries participated and in 2007 - 54 countries took part.

The main goal of this article is presenting, on the basis of the available information sources, the condition of the development of the Polish market of swap contracts. Due to the fact that in Poland only swaps related to currencies and interest rates are applied there will be no reference to the other kinds of swaps (e.g. credit default swap, amortizing swap, asset swap, etc). As a practical example of application of swaps transactions made by a listed company TP SA will be presented. In the summary the perspectives of further formation and development of swap market in Poland will

be considered as well as the barriers slowing the process.

Currency Swaps (FX swaps) in Poland

The first swap made in Poland was a currency swap initiated in 1992 by Polski Bank Rozwoju SA (in 1997 it was taken over by Bank Rozwoju Eksportu SA). In the second half on 1994 such contracts were already offered by 8 banks. Among others Polski Bank Inwestycyjny and ING Bank. Although the first contract was made already 2 years after the beginning of building the financial markets in Poland, one had to wait another 2 years for the swap markets to really start to exist. Banks' inexperience and weak technical and telecommunications infrastructure were the reason that in the years 1992-95 there did not even exist the beginnings of the swap contracts market (Pietrzak, 1997). Also lack of experience and knowledge among the economic entities about the operations of currency market contributed to the little interest of exporters and importers in instruments of protection against currency risk including swap transactions, which had been available since 1992. Another element making the development of the market difficult was also lack of brokers and dealers. Only towards the end of 1994 in Polish inter bank market did Prebon Yamane start it's operation and Marshal in the first months of 1996 (Malecki, 1996).

A considerable development of currency swap market occurred in 1998. The reason for this were mainly foreign investors wishing to possess assets or liabilities in PLN, in the situation where access to this currency remained limited. Until the implementation on January the 12th 1999 of a new Foreign Exchange Act the Polish legislation did not allow non-residents to take short term loans in PLN. Currency swaps made bypassing currency restrictions possible for them (Pietrzak, 1999).

The new Foreign Exchange Act completely liberalized regulations for current turnovers and certain limitations for capital turnover.

Foreign entities up-to-date have the biggest participation in the currency swap market. They use the swaps both to obtain PLN and to deposit it in Polish banks. This is a natural consequence of the increase in value of the portfolio of purchased national securities and growing presence of foreign capital in Polish economy. In both cases, in the balance sheet of a foreign investor there is a long

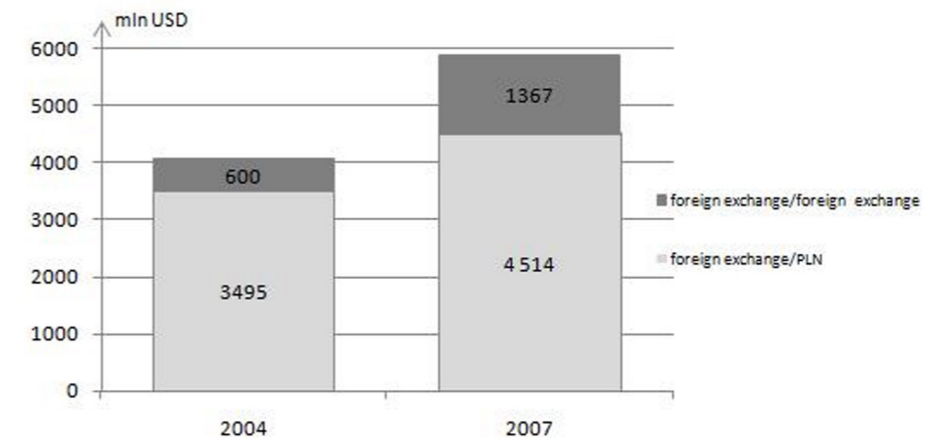
item in PLN carrying the risk of loss in the result of potential decline in PLN exchange rate. That is why part of foreign investors to hedge themselves before currency risk finances the purchase of Polish securities or other assets with loans in PLN which were made in the market of currency swaps.

Below will be presented the results obtained on the basis of questionnaires directed to the most active banks and credit institutions branches operating in Poland. National Bank of Poland decided that in 2004 reports received from 16 entities and in 2007 from 18 entities were representative sample. The value of the transactions was respectively 99 per cent and 97 per cent of the national market of over the counter derivatives. In the evaluation of the activity transactions between finance institutions and corporate clients were included. In figure 1 average daily currency swap turnovers are presented.

The increase in activity in currency swaps market in Poland is confirmed by 43 per cent increase in average daily turnovers in 2007 in comparison to 2004. The most frequent transaction was a transaction of PLN exchange in individual years they were respectively 77 per cent and 85 per cent of all transactions. In relation to the transaction of foreign currency exchange the more than double increase is characteristic in recent period of time. Figure 2 shows a detailed currency structure.

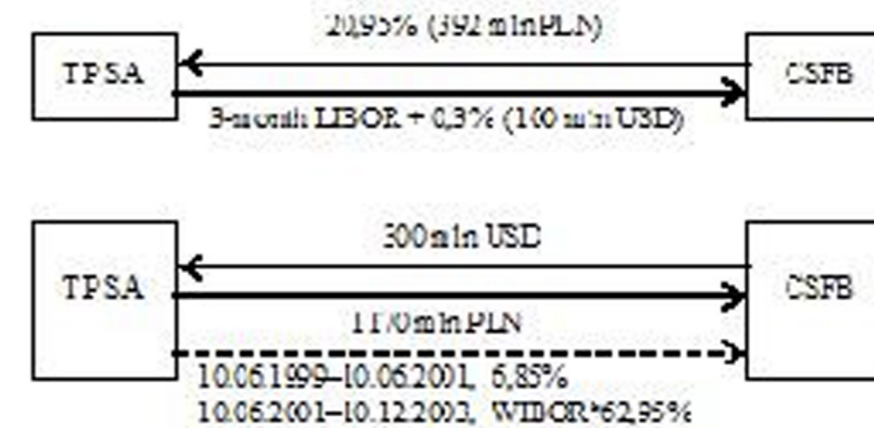
In both surveyed years majority of transactions related to the exchange of USD/PLN. Bigger activity in this market resulted first of all from the increased engagement of foreign investors in the bonds nominated in PLN market. Part of this growth was financed with PLN obtained in the market of short term transactions of FX swap. Foreign banks borrow in inter-banks market low rate of interest currencies and exchanged them to USD, then in the market of currency swaps most often in one-day operations they borrow PLN in exchange for USD. Comparing currency structures in the surveyed years one may observe in 2007 increase by over a half of transactions in which PLN was not exchanged. Greater activity in this segment of the market resulted among others from the increase in speculative transactions (taking currency position in the spot market and short term in the market of currency swaps). Both in speculative and hedging transactions swaps made for up to 7 days dominated. It is confirmed by period structure presented in figure 3.

Figure1. Average daily currency swap turnovers



Source: own study on the basis of NBP data

Figure 2. Currency structure of FX swaps



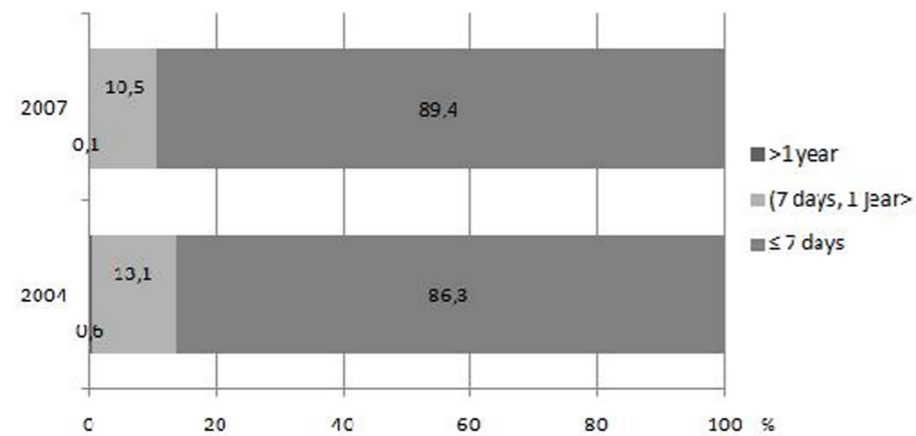
Source: own study on the basis of NBP data

Figure 3. Period structure of FX swaps



Source: own study on the basis of NBP data

Figure 4. Average daily FX swaps turnovers according to entities participating in transactions



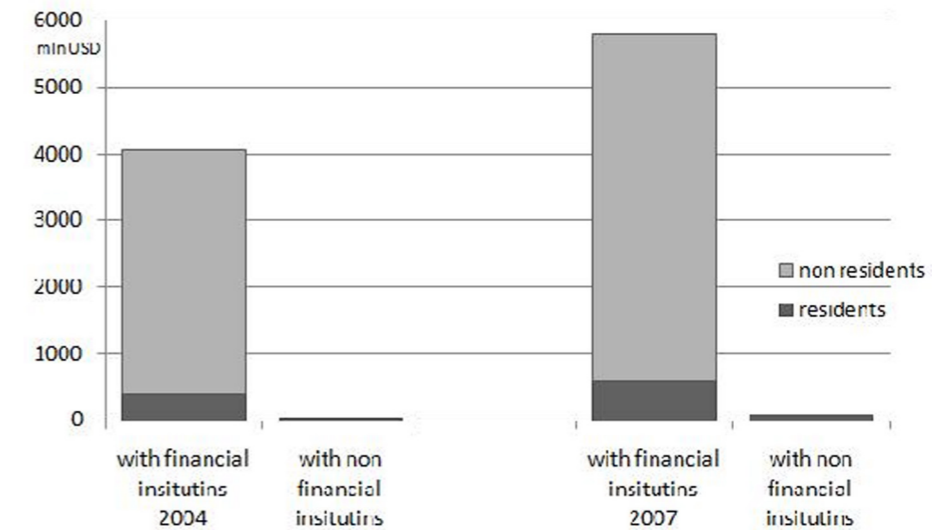
Source: own study on the basis of NBP data

Because of high participation of short term transactions in the swaps market, currency swaps are the most liquid instrument of currency market in Poland. Transactions above one year are not even 1 per cent of contracts. Engagement of market participants in transactions of short period of realization is related to the implementation of the investment strategy and speculations described above. The currency and period structure presented above is determined by the growth of participation of foreign investors in the Polish financial market. In 2007 in comparison to 2004 the value of average turnovers of their transactions increased by 43 per cent. However, the structure of share in the general value did not change. In both years it amounted to 89 per cent. Figure 4 shows the engagement of residents and non-residents in the Polish market of currency swaps with the division into transactions made with financial institutions and non-financial institutions.

In Poland majority of swaps is made with financial institutions. In 2004 contracts with other entities were merely a 1 per cent of the general value and in 2007 2 per cent. As far as the non-residents are concerned in 2004 there were not any transactions with non financial institutions at all.

The presented structure of turnovers indicates that currency swaps made in Poland as the transaction of exchange of one currency into another with the condition of re-purchase later, enabled the foreign investors obtaining of PLN for the time of investment in Poland and then after it's closing another exchange of PLN into USD or EURO. Currency swap is thus a substitute of a short term loan in PLN. The experts in Polish financial market claim that it was just the wish to speculate of foreign entities in the environment of high interest rates that contributed to the development of currency swap contracts in Poland.

Figure 5. Average daily interest rate swaps turnover



Source: own study on the basis of NBP data

Interest Rate Swaps (IRS) in Poland

The Polish market of interest rate and currency-interest rate swap contracts in PLN formed itself only in 1998. Interest rate decreasing in the years 1993-1999 contributed to this. Thus the companies lacked the motivation to hedge themselves. The first transaction was made in the London market. The year 1999 brought a change in the home market when a change in the inflation tendency occurred. Price increase caused the increase by the central bank of interest rates and looking for tools securing against the results of the fluctuation. In mid 1999 transactions IRS with reference rate for payments with changeable interest rate WIBOR 6M became a standard. WIBOR 3M is more seldom used in this role. The typical times of contracts in Poland are from one year to ten years. Sometimes, mainly in transactions with non-banking clients in London market, there are 15 year and 30 year swaps but this is a low liquidity market. Figure 5 shows average daily turnovers in interest rate swaps.

In comparison to currency swaps, interest rate swaps in the surveyed period were characterized by much greater dynamics of turnovers. Average daily turnovers in that market increased in 2007 almost 4 times in comparison to 2004. Similarly as earlier analyzed swaps majority of swaps was in PLN (about 80 per cent). Such a big increase in turnovers may be partly explained by low basis

effect. It must be observed that in majority of new instruments in the first years of their functioning there is a quick increase in the value of turnovers then, after achieving a specific level, from year to year numbers grow much slower. The increase in turnovers was caused by the increase in the number of active market participants from among home banks and change in the perception of credit credibility of Polish banks. Foreign banks were more willing to make IRS contracts not only in the London market but also with banks operating in Poland. Figure 6 shows the structure of turnovers in relation to participating entities.

Similarly to the case of currency swaps more transactions were made by foreign entities. Their dominance was not however so big. In 2004 the participation in average turnovers amounted to 67 per cent and in 2007 only 55 per cent. Foreign entities and entities operating in Poland used the IRS transactions market among others to secure themselves against the results of bonds prices fluctuation. IRS thus increased the opportunities of managing the risk of interest rate and simultaneously contributed to the development of the bonds market. The structure of entities with whom transactions were made did not however change. Non-financial institution still appeared sporadically as a contract party and non-residents did not make transactions with them at all. They formed only 0,5 per cent of the value of transactions. In relation to currency

structure about 80 per cent of transactions were made in PLN. In 2007 it is characteristic that there appeared nominal amounts in other currencies that USD and EURO. The share of transaction in EURO fell over a half in comparison to 2004 and in USD as much as 90 per cent.

Interest rate swaps currently belong in Poland to the most dynamically developing interest rate derivatives. Apart using them to hedge the price of instruments the value of which depends on interest rate they began to be perceived as a tool for management of the credit cost. Earlier it was thought that an entity cannot influence a change in credit price and thus the increase of cost of credit servicing. However the increased competition in the market forced business people to control risks and to search for suitable methods of hedging. Conducting thorough analyses and forecasts of cash flows allows an institution to maximize the use of capital and minimise the cost of the debt.

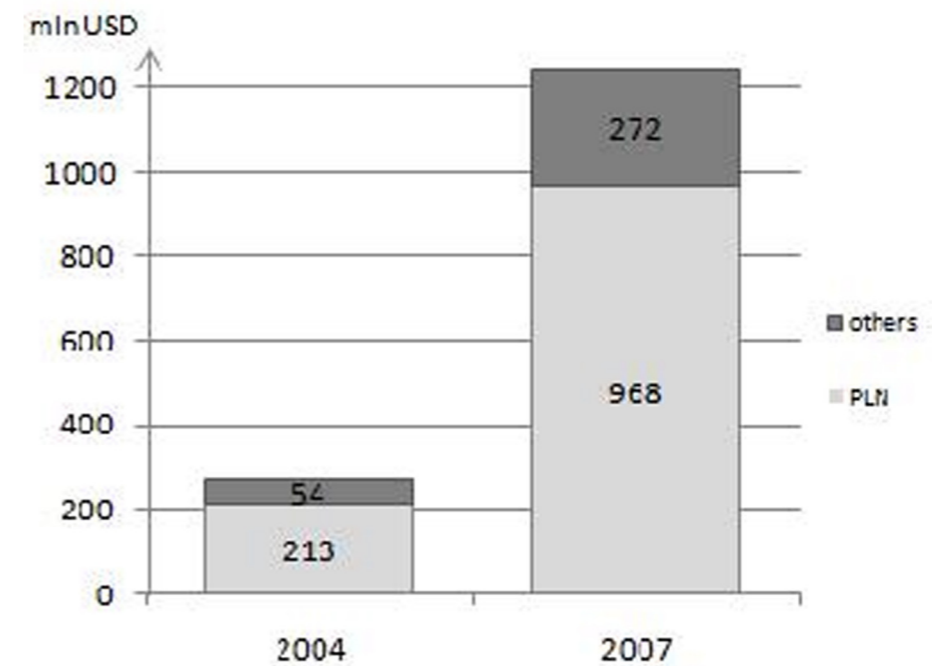
Currency Interest Rate Swaps (CIRS) in Poland

In comparison to the previously discussed transactions CIRS is an agreement of exchange capital amounts and interest rate payments in different currencies between two partners (Winstone, 1995). It is often described as an exchange of the nominal value of a loan and it's interest in one currency to the nominal value of the loan with interest in another currency (Hull, 2005)

The interest in those swaps in Poland increased after 1999. It was related with high level of interest on credits in Poland. Polish companies searched for cheaper financing sources in foreign markets. Additionally the value of credits from foreign investors to daughter companies operating in Poland increased. Besides companies often took currency credits even when their payments were made solely from income in PLN. It put them at risk of the decrease in value of Polish currency and the risk of increase of foreign interest rates and thus the risk of a loss. The lack of hedging caused losses for many companies in Poland towards the end of the 90s due to the negative exchange rate differences and unpredicted increase of interest cost.

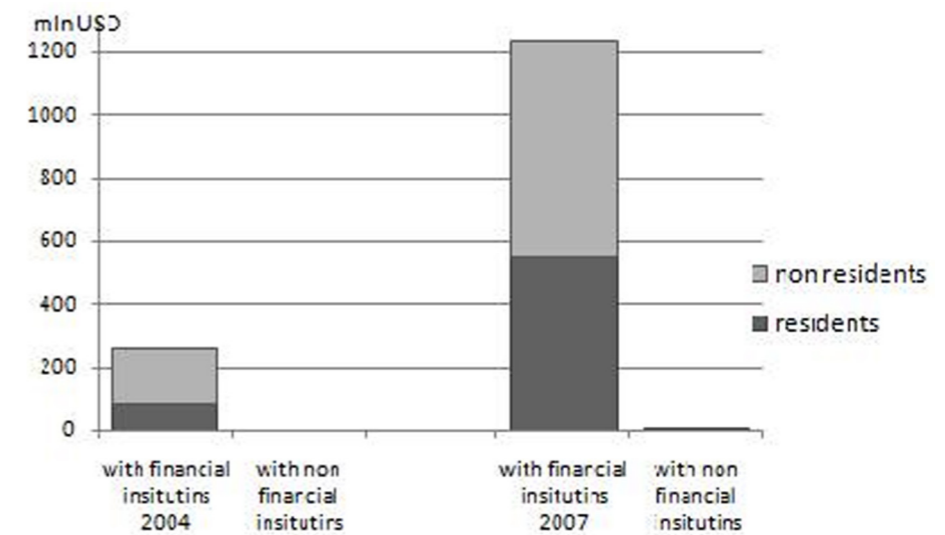
Enterprise managers begin to perceive that necessity of applying instruments enabling hedging the changes in exchange rates and interest rates. CIRS created such opportunities allowing managing currency risk and interest rate risk for the period of even ten years whereas other transactions offer securing mostly up to one year. Besides, similarly as in the case of other swaps, as OTC transactions they may be adjusted to each credit contract. Even though companies are aware of the necessity of managing currency risk and interest rate risk a meaningful increase in CIRS engaged means occurred only after 2004 which is visible in figure 8.

Figure 6. Average daily IRS turnovers according to entities participating in transactions



Source: own study on the basis of NBP data

Figure 7. Currency structure of IRS



Source: own study on the basis of NBP data

Figure 8. Average daily currency interest rate swaps turnovers



Source: own study on the basis of NBP data

In 2007 the average daily turnovers in this market amounted to 68 million USD whereas three years earlier merely 3 million USD. The development of CIRS market was additionally related to a dynamic increase in value of mortgage property credits indexed in relation to foreign currencies. It was connected with currency structure in which 90 per cent of turnovers was the exchange of foreign currencies into PLN.

In comparison to IRS and FX swaps a much higher participation of home entities in this market is characteristic. The value of means engaged by them was 63 per cent of general value of turnovers. Besides, the share of non-financial institutions in the concluded contracts was much higher. In relation to IRS and FX swaps it was just a fraction of percentage whereas with CIRS their share was around 22 per cent. The transactions were made mainly by big companies financing themselves in the international market. In relation to foreign entities what characterizes the investigated period of time is the lack of transactions with non-finance institutions. They only made contracts with banks.

Example of the Use of CIRS in the Polish Market

The applicability of swaps will be presented on the case of a listed company, Polish Telecom (TP SA). A dynamic development of the telecom industry which the company is operating has contributed to the industry's demand for external sources of financing. As a result, a need has arisen to protect against unfavourable changes of exchange rates.

Given relatively high global values of transactions made by telecom companies, even slight variation of exchange rates can constitute a threat to meet their current obligations.

The enterprise's exposition to currency and interest rate risk has appeared on 18 December 1997 when the company closed a credit contract with Bankers Trust Company, representing a consortium of loan-providing banks. The loan, of USD 350 million, was taken out for seven years. The total amount was paid in two instalments: USD 200 million on 18 December 1997, and USD 150 million on 12 January 1998. The two parties agreed on a variable interest rate based on the 3-month LIBOR rate plus 0.3% of margin, which was later raised to 0.5%. The loan was to be paid back in nine equal instalments, starting three years after the contract date. The settlement of each instalment was scheduled for the 36th, 42nd, 48th, 54th, 60th, 72nd, 78th, and 84th month of the contract, respectively, i.e. each 6 months.

In fear of a rising exchange rate of USD, and hence also the level of the interest rate, TP SA made a hedging transaction, using the cross currency interest rate swap. Within a 7-year swap contract closed on 29 December 1997, the company transferred the currency risk related to USD 100 million on Merrill Lynch Capital Services Inc. (MLCS). According to the terms and conditions of the contract, the USD-denominated amount borrowed at a variable interest rate (3-month LIBOR plus 0.3% of margin) was exchanged for a PLN-denominated amount at a fixed rate (20.95%). Within the contract the parties do not actually

transfer the money but only settle net amounts denominated in USD on defined dates:

- for interest payments – each 3 months (29 December 1997 to 29 December 2004)
- for capital instalments – each 6 months (29 December 2000 to 29 December 2004).

A graphic presentation of the transaction can be found in Fig. 9.

Following the transaction, in relation to USD 100 million, TP SA set off the risk of a rising USD/PLN exchange rate since the interest the company needs to pay on the loan equals the interest received within the swap transaction. According to the swap, the company is exposed to the risk of higher interests in case of lower interest rates in Poland. As a consequence, and provided that the risk of a rise in the USD/PLN exchange rate is not entirely balanced, on 10 June 1999 the company closed another deal with Credit Suisse First Boston (Europe) Limited (CSFB), which included two transactions:

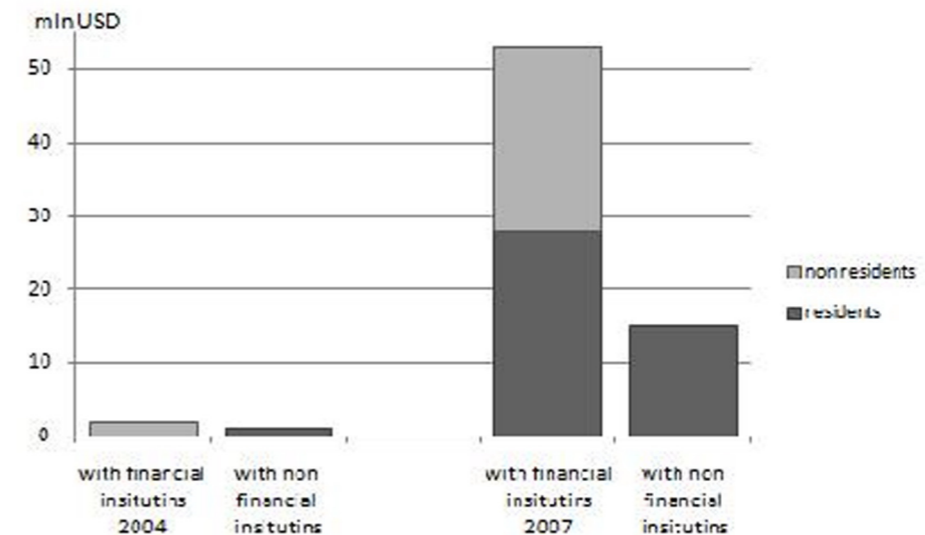
1. A transaction opposite to the one made on 29 December 1997 with Merrill Lynch Capital Services Inc.
2. A swap transaction which transferred the currency risk related to USD 300 million on CSFB.

Within the second transaction, on 10 December 2008, CSFB is obligated to pay USD 300 million to Polish Telecom, which in turn need to pay PLN 1,170 million to CSFB. Moreover, TP SA is obligated to pay interest each 6 months of the 4.5-year period calculated as follows:

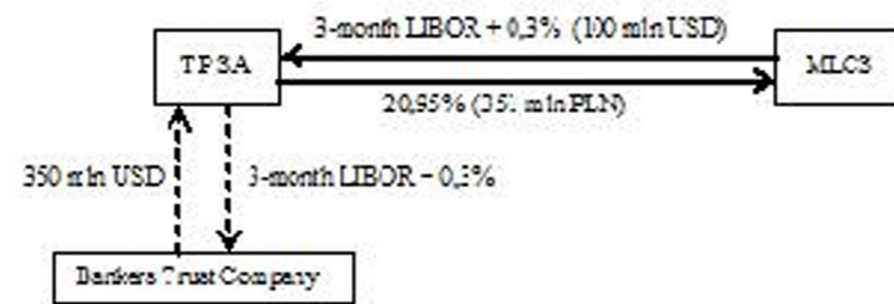
- In the period 10.06.1999–10.06.2001 – a fixed rate of 6.85% annually,
- In the period 10.06.2001–10.12.2003 – a 6-month WIBOR rate multiplied by 62.95%.

The company is however entitled to one change of the variable exchange rate into a fix one. The interest is calculated for the basis of PLN 1,200 million. On the settlement day, CSFB is entitled to transfer the net payment. The above-discussed transactions have been presented in Fig. 10.

Figure 9. Currency swap between TP SA and Merrill Lynch Capital Services Inc.



Source: own study

Figure 10. Currency swaps between TP SA and Credit Suisse First Boston (Europe) Limited

Source: own study

It should be emphasized that the first transaction, opposite to the transaction made on 20 December with Merrill Lynch Capital Services Inc., was intended to reduce the obligations originating from that contract. Due to the fact that it was made approximately 1.5 years later, the cash flows in both transactions will not be equal.

In the second contract, in exchange for USD 300 million which TP SA received in December 2008 at a price of PLN 1,170 million, the company has to pay certain interest over 4.5 years. Without taking into account the interest paid to Credit Suisse First Boston, on 7 October 2008 the Polish company would have to pay only PLN 763.53 million in exchange for USD 300 million (at the average exchange rate of the National Bank of Poland equal 2.5451), following a significant decline in the USD exchange rate. In such a case the lack of hedging would be more profitable. Yet, every entity hedging against a sudden change of exchange rates reduces the potential for higher profits. It should be emphasized, however, that both parties can modify the conditions of the transaction, both those concerning the nominal value and interest payments.

Conclusion

The swap market in Poland has been developing dynamically since 1999, after the "Foreign Exchange Act" came into force, introducing external exchangeability of the Polish zloty. The financial institutions from EU member states were given the right to operate freely in Poland under similar terms and conditions as their Polish peers. It encouraged a clear inflow of foreign banks to the swap market thus raising its volume and competitiveness. A fast development of this market can be explained with a

number of applications of this instrument; it is used for instance: by foreign investors to take out loans to finance the purchase of Polish bonds; in hedging against the risk of holding securities sensitive to changes of interest rates or exchange rates; in speculation on the change of those values. As a flexible and over the counter market, it enables developing strategies tailored to individual needs of various entities.

The increases in the amounts of the capital engaged in swap transactions vary, however, with the type of contract. A clearly high dynamics of growth is observed for interest rate swaps. The global amount of currency swaps also increases, but the process is not so dynamic as in the previous case. Next to the first generation swaps (FX swap, IRS, CIRS), the sector of second generation swaps (eg. credit swaps, asset swaps) begins to develop. The latter is a modification of classical swaps and allows diversification of a variety of risks.

At the moment, the swap market in Poland is mainly a place where it is banks that play the most important part – they are either directly involved in transactions or act as intermediaries. All the contracts are closed in the primary market. The secondary swap market in Poland practically does not exist. It is one of the major barriers to the development of the market as the transactions cannot be resold. Moreover, in the light of Polish regulations, certain institutional entities are not entitled to use derivatives. The other major barriers impeding the development of that market include:

- lack of guidelines for recording swap contracts in companies' books
- insufficient knowledge of those instruments among management staff

- lack of financial institutions prepared for swap warehousing in Poland.

Nevertheless, irrespective of all those barriers, further development of the swap market in Poland should be expected. It is related to the globalization process, which brings domestic financial markets closer to foreign markets. Furthermore, foreign institutions operating in Poland stimulate the development of derivatives, and swaps in particular. The development of the market is also supported by a dynamic development of IT and telecommunications.

Questions

- What types of swaps are available in Poland?
- How companies can use swaps in managing currency risk and interest rate risk?
- What do you think are the most important opportunities and barriers of developing swaps market in Poland?

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THE MEDIA AND THE PRICES CREATION IN POLAND

SEBASTIAN MAJEWSKI
UNIVERSITY OF SZCZECIN

Abstract

As we know there is a part of non economic factors, which are determinants of market pricing of stocks. Classic economic researchers show that all economic activities in real world are reflected in the price of dependent stock. And because of the fact that human is homoeconomicus this reason has most important influence on the market value. Of course this is only one of many theories in economy, but most of finance models are closely tied with this point of view.

This article stays in oppose of classic theories, as many of stream of behavioural finance. In this case will be showed research, which major goal is proving of strong influence of media news on process of market valuation of stocks on the Warsaw Stock Exchange. This correlation is not simply direct but by the cause of feelings and emotions of investors. Headlines of press news attack all of investors every day but especially when the market is running down media bring pressure on the behaviour of investors. The human nature makes that all of investors activities include between greed and fear. Robert Shiller (2001) shows twelve determinants of speculative bubbles and as one of most important is media expansiveness in reporting situation on the stock exchanges.

This work is based on information from Polish Press Agency (PAP), which are transmitted during a trading session. Author choose information from September 2008 – month of crisis situation in capital markets in the world especially in United States of America. In this research will be used daily frequency of critical news appearing ratio as a media representing factor. An analysis in this case is lead by using correlation analysis.

Keywords: speculative bubble, media, behavioural finance, financial management, Poland

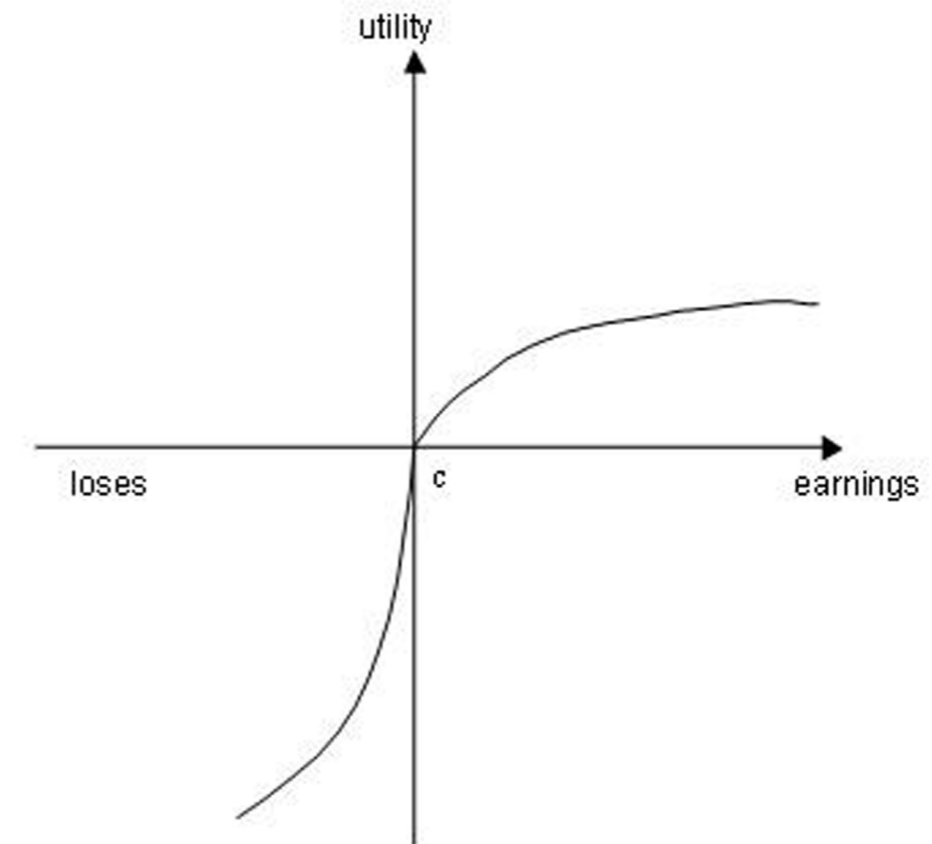
Introduction

The human behaviour in last twenty years played important role in building value of stock exchanges, in creating interactions between market participants, etc. In 1979 D. Kahneman and A. Tversky (1979) created the new theory, which has had to explain why people are not rational in the sense of G. Becker theory (19). In this work authors showed that there is significant difference between behaviour of investor during loses and gains. Figure 1 shows difference in level of emotions during a process of receiving information about results of economic activity.

The meaning of this chart is that human is more sensible for loses than earnings. This difference is about 2,5 times more for loses than earnings. It means that when an investor loose 100 \$ has to earn about 250 \$ because of compensation losses. Starting from this point in world of finance there is discussion about assumptions of models and theories called as classical.

In 2001 R. Shiller (2001) showed that there is most of non economic factors, which could have influence for behaviour of investors. One of most important group of them could be called as irrational exuberance. In this case study will be showed that character of presenting in media information plays huge role in a process of perception and interpretation economic events on the example of Warsaw Stock Exchange in September 2008.

Figure 1. Utility function for earning and loses with respect to point of reference c.



Source: [Rabin M., Psychology and economics, Department of Economics University of California – Berkeley, 1996], page 8.

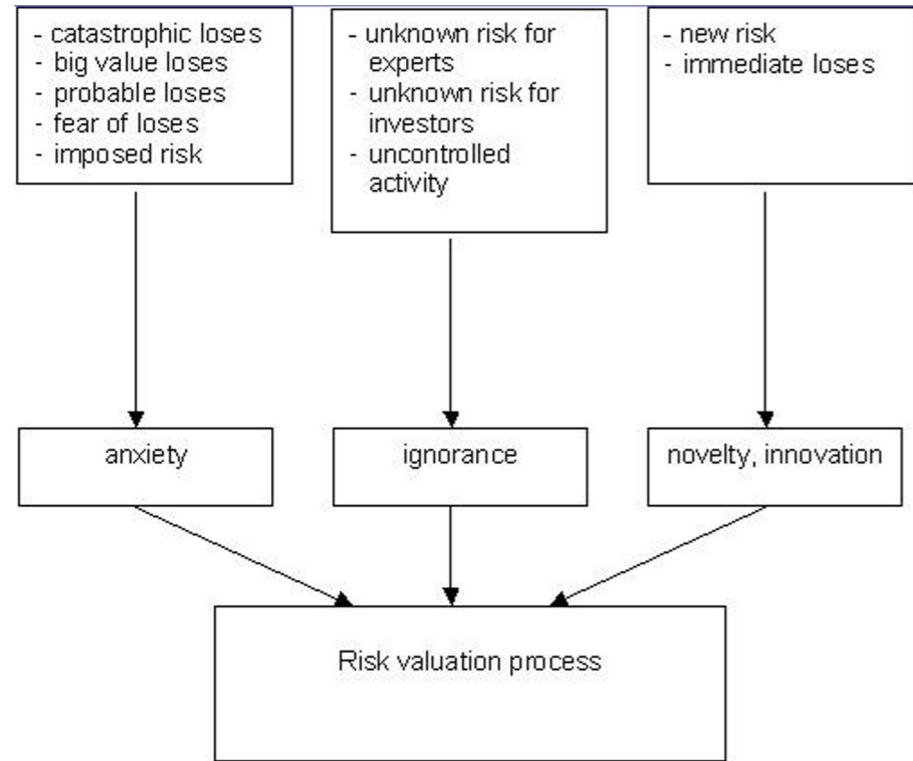
Theoretical aspects

A point of view in most of cases are formed by media. Mainly it concerns a perception of risk. People have tendencies to attribute greater riskiness to objects and events, on which an attention of media are more focused. It is because of form of presentation. For example all of plane crashes are presented in form of pictures stimulating imagination and car crashes are presented as statistical data. It is because a probability of plane crashes is smaller than car ones. But if an ordinary consumer has been asked what kind of accident he is afraid more, answer mainly will show for plane crashes. Analogous all information about crisis, crashes and bankruptcy are overestimated.

Figure 2 presents major factors of valuation of economic activity risk on the base of article of Koonce and others (2001).

There were many experiments, which have to explain an influence of information on valuation of stocks in future. Andreassen (1987) in his research presented fictitious news and quotations of stocks (positive and negative) for a selected group of investors. After that investors have to estimate new value of this stocks. An alternative group of investors in predictions of future stock's value most often used regression to the mean process a selected group. A selected group of investors have been predicted stable growth of stocks. It means that when an investor is under systematic press noise does not use knowledge and intuition in valuation process.

Figure 2. Risk valuation process – the most important factors



Source: Koons and others

Shiller (2001) described another one phenomenon – speculative bubble, which is closely tied with media influence on financial markets. Speculative bubble is an unsustainable increase in prices brought on by investors' buying behaviour rather than by fundamental information. There are twelve factors that may have explain existing or creating of speculative bubbles on the financial markets. One of them is an expansion in media reporting of business news.

The level of public interest attention on the financial market significantly changes. It causes a dependence of stable continuous information of business receivers. Most of authors underline meaning of media in building market atmosphere (see Dyck and Zingales, 2002). In table 1 are presented share of number of articles about stock market in global number of business information in United States of America in chosen years.

The effect of "speculative bubble" in construction industry branch existed on the Warsaw Stock Exchange in the period both in 2006 and 2007. It can be seen significant investor interest for the construction companies. An interesting fact is that cases are reviewed at the end of the session can be seen strong declines in share prices, as attested by high turnover. Maybe it causes by the fact that loss is felt much more severely than the profits of the same value as in the work of Kahneman and Tversky (1979). In this period P/E ratios for companies from this sector were higher then market average even about 230 times. For company PBG this ratio achieved as many as 7 012,28 points.

An additional aspect of rising price during this period was winning by Poland and Ukraine hosting the European championships in 2012, which must result in the construction of new road infrastructure, hotel, sports, etc.

Table 1. The significance of information in stock exchange life

years	share
1920	Less than 0,1%
1922-1924	0,025%
1925-1928	0,035%
1929-1932	0,093%
1982	0,194%
1987	0,364%
1990	0,171%
1996-1998	0,283%

Source: based on Shiller R. (2001), p.57-59

It is also important that the wanted effect is possible to detect in two cases: for shares of small companies, where you can manipulate prices or for large capital will be involved in such ventures but it is rather impossible on stock exchange in Poland. This situation was analyzed when the market was stable.

Methodology and data

In this case study press economic information, taken from Polish Press Agency (PAP), is treated as a source of media noise, which has an influence on the value of stock quoted on the Warsaw Stock Exchange. The best period for such kind of researches was September 2008. All economic news were selected for three types of groups: neutral information, positive information and negative information. Next from the last one group (negative) another one (the most tragic news in the sense of economy) was selected. As the most tragic news author recognized such news, which in its title have had such words as: crisis, fall down and panic. On the base of this data indicator of media expansiveness was constructed. This indicator is a quotient of number of articles in chosen group of information and number of all PAP's information in particular day.

$$BNI = \frac{NBN}{TNN} \cdot 100\%$$

where:

- BNI – bad news indicator;
- NBN – number of bad news;
- TNN – total number of news.

This indicator is calculated with daily frequency and it means an intensity of negative information form press relations. Analogous tragic news indicator (TNI) was calculated in this case.

The second type of data are daily rates of return of stock exchange's indexes from the same period. Indexes WIG and WIG20 (Warsaw Stock Exchange), S&P500 and NASDAQ (New York Stock Exchange) and DAX (Frankfurter Stock Exchange) as a base of sensibility analysis. The rate of return was estimated on the base of equation:

$$RR = \ln\left(\frac{P_t}{P_{t-1}}\right)$$

where:

- RR – rate of return;
- Pt – price (value of index) in period t;
- Pt-1 – price (value of index) in period t-1;
- t = 1,2, ..., n (number of quotation days).

The author used methods of correlation and regression analysis to identify behavioural character of dependency between analysed variables. Because of a short time period in this research very important is statistical verification of significance of correlations. The level of confidence in this case is set as 0.05.

In this research as the first were presented correlation coefficients between rates of return of indexes of chosen Stock Exchanges. Next the research will show how strong is an influence of media relations on the changes in prices of stocks quoted on the Warsaw Stock Exchange.

Case study from Polish Capital Market

The situation of financial markets in 2008 is very complicated. First of all real estate market in United States of America was collapsed. It was because of the low level of interest rates in mortgage banks and easy procedures of an award of loans and credits. Nowadays American banks have problems with credit collaterals – real estate. There is no demand on this market and the market value of this collateral still decline. The uncertainty tired with hard situation of banks moved to Stock Exchanges and because of a fact that a situation in the nearly whole markets on the world depend of American, the uncertainty moved to Europe.

First question is how much Warsaw Stock Exchange depends of the other markets. For an example New York Stock Exchange and Frankfurter Stock Exchange are chosen for correlation analysis. Table 2 presents correlation coefficient between four market indexes: WIG, S&P500, NASDAQ and DAX in September 2008.

The most important information taken from the table 2 is that all of coefficients are statistically significant. There are positive correlation between all analysed markets. It could cause more probable influence one market on the others. The huge part of stock exchange analysts, specially technical, predict turnover points on the local market on the base of situation in New York Stock Exchange. But it is also true that European market are rather specific. Because of effect home bias (Kilka M., Weber M., 2000 and Lewis K.K., 1999) and Europe bias (International Corporate Finance, 2005) declines from the NYSE are not

moved proportionally to local markets. Such bias causes that investors value as more risky all of foreign papers and risky less domestic shares. So international diversification of portfolios is used but with low level of confidence.

Figure 3 presents quotations of base index of WSE with indicator of frequency of tragic news in September 2008.

As we could see WIG in this period was in strong decline trend and in six important momentums 15th -16th, 22nd -23rd September and 02nd and 06th October strong reaction corresponds with TNI values. It suggests that media could play important role in creation of declines.

There bad news dominated on the WSE in analysed period and it causes that market was non-stable. But correlation analysis do not prove that. Correlation coefficients between BNI and RR of WIG was -0,23 (non significant) and with WIG20 -0,40. Such level of correlation is unsatisfied. Better results were reached for the correlation between TNI and WIG (-0,52) and WIG20 (-0,49). From this point of view we could suppose that extra negative information could create market pricing by forming the public opinion.

Using information from the correlation coefficient of the first and the second analysis we can estimate an econometric model on the rate of return of WIG index. The RR model is represented by the equation:

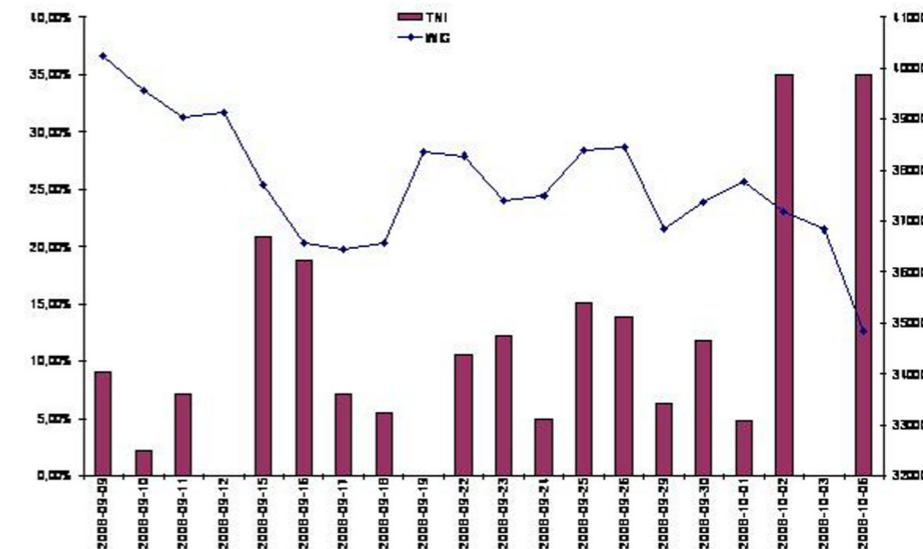
All of estimated parameter were statistically significant and determination coefficient R-squared amount to 0.57. This model in 57% describes process creation of rates of return on the Warsaw Stock Exchange. Probably an influence of the other for example economic factors could be closed in 43%. in crisis situation on the financial markets. The standard error of this model amount 0.017 and means that standard calculation with using OLS method could be biased with only +/- 1.7%. So each decline of RR of S&P500 by 1% will cause decline of RR of WIG by 0,364%. Analogous increase of frequency of tragic news in PAP headlines by 1% will cause decline of RR of WIG by 0,059%. When we adjust that this frequency could rise for about 30 percentage points (Figure 3) a day it could generate more heavy losses.

Table 2. Correlation coefficient for chosen indexes in September 2008

	WIG	S&P500	NASDAQ	DAX
WIG	1,000	0,652	0,624	0,853
S&P500	0,652	1,000	0,991	0,649
NASDAQ	0,624	0,991	1,000	0,650
DAX	0,853	0,649	0,650	1,000

Source: own estimations

Figure 3. WIG versus Tragic News Indicator – September/October 2008



Source: own researches

Conclusions, Recommendations for the future

This article shows how difficult is to manage of financial assets in the point of view stock exchange investor. There is created chaos in the field of business information because of many waste information on the market. This is the reason of popularity of behavioural finance and behavioural economy. Because of expansion of media and building dangerous look of speculations on the stock exchanges almost all financial market even banks are under serious danger of bankruptcy.

In this research author showed that the Polish capital market is closely tired with the American

and is very sensible for the information created by media. Nowadays market of information is 24-hours and it is very difficult to say which information is the impulse and which is the reaction. It is clear that in such momentum it is hard to have a quiet behaviour especially when whole the situation is related to the money.

As we know in the past there were speculative bubbles for example tulip-mania in years 1634-1637 and dotcom-mania in 90's. All of increases which do not have any reflections in economic situation finished by strong declines. In the case of tulip-mania decline amounted 99,6% top's value. It is possible that in this case we have a new mania – real estate-mania. It is difficult to predict

how deep will be decline of prices. Nowadays we could be sure that this crisis cover not only real estate market in the United States of America, also American and European Stock Exchanges and banks.

The present situation on the stock exchanges all over the world proves that behavioural factors should be included in process building of predictions, in financial management and also in building of new models describing the capital market.

For the future it will be better if media, especially television, will announce not all but only reliability information without emotions.

Questions

1. What kind of factors could be distinguished in the process of risk's valuation?
2. What is the speculative bubble and how it affect on financial management process?
3. How could you secure before an affection of media speculations during the crisis?

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VALUE FOR BANKING SERVICES CUSTOMER IN POLAND

EDYTA RUDAWSKA
UNIVERSITY OF SZCZECIN

Abstract

The main aim of the article is to identify the sources of value for customers who use banking services in Poland and to present the theoretical background to the issues involved. The article consists of five parts. In the first part the author focuses on the necessity of treating a bank as a portfolio of customers not products. At present bank's profit and the resultant value of it come from these valuable current customers of a bank as well as from the ability to attract and keep new, attractive for an enterprise customers in the future. The second part presents an influence of customers and customer relations on bank's value. The significance of a proper management of customers as a new resource is also underlined. The third part of the article is an attempt to prove that not all customers are equally important to a bank. In order to translate customer relations into bank's value they have to be established with proper customers, i.e. those who will increase cash flows in the long term. At the same time it has been noted that the value of the customer for a bank depends on the value that the bank offers the customer. Thus the author proceeds to the next part of the study, in which sources of value for customer are presented. They are presented in three groups: economic, functional and psychological values. The last part presents results of the research conducted by the author, in which, basing on theoretical deliberations, the author indicates the sources of value for customers of banking services in Poland. The research was conducted by means of a computer aided telephone interview – CATI. The research was conducted all over Poland among 1320 respondents, who were customers of banking services. The conducted research showed that customers of banking services in Poland attach as much significance to functional value as to psychological value in the process of the creation of relations with a bank.

Keywords: value for customers, banking services market, Poland

Company as a portfolio of customers, not a portfolio of products

According to the concept of the company value management, which has been developing since the 50s, the overriding aim of a company is to increase its value. At the same time, a lot of authors of papers on the company value imply that companies in their activities should be guided by their shareholders' imperatives, otherwise they will face the loss of their competitive position on the market of capital gaining and the threat of losing their chances of development. It means that they should strive to increase value for their shareholders. This situation also applies to banks. Shareholders buy its shares, thus providing the bank with an essential capital, and at the same time they expect a specific rate of return. Having many possibilities for investments, investors choose the most promising option, which provides the most possible return at an acceptable risk level. When they decide on a particular enterprise, they abandon profit they could get, if they chose a different option. Managers, who are aware of this fact, should take actions which will provide an increase in capital value in a given period of time and an increase in the value of the dividend withdrawal (Rappaport, 1987). This is the only way to retain current investors and to encourage them to invest. Otherwise, an investor can withdraw his capital from a particular enterprise, which may cause other potential investors to avoid investment in a given company and to put their capital in these companies which bring exceptional rates of return from invested capital. This can result in a lack of access to the capital and the resultant lack of possibilities to conduct research, introduce improvements and innovation important for customers' satisfaction. The necessity of attention to a lasting increase in shares' value is also connected with the possibility of attracting and retaining good employees. The best employees, who are more often offered shares as a part of their salaries, and who can participate in the

success they contribute to, will resign from the cooperation with a bank which does not provide their shareholders with the expected profit. The capitalization of financial institutions is given a lot of attention, because sometimes they have to buy other institutions if they want to come into the possession of a particular technology, customers or employees. Highly priced shares are important in such transactions (Selden, Colvin, 2007).

Searching for possibilities of an increase in value for shareholders, banks introduce various strategies of the management of offered products and they take actions in order to improve the efficiency of their branches, units, etc. However, such activities are not sufficient nowadays as they concern both profitable and unprofitable customers. It is a fact that bank's customers include both profitable and unprofitable ones, who decrease its value. It is also true that all profits and the resultant value of a bank come from current valuable customers as well as from skills in attracting and retaining new attractive for the bank customers in the future. Therefore, modern banks should be perceived as the portfolio of customers, not the portfolio of products or services. Focus on the customer, not on products, leads to a higher rate of return from the invested capital. Banks which concentrate their decisions and strategies on the customer, focus their attention on satisfying all their needs, and such orientation often causes banks to offer additional services and intellectual value. Such a situation enables to generate higher margins and to increase profit from the invested capital more quickly on account of the small investment contribution related to these activities (Selden, Colvin, 2007). The above mentioned statement is confirmed by the well-known rule that purchase decisions taken by customers are influenced by the basic offer in 30%, and its participation in costs related to the offer constitutes 70%. On the other hand, additional services determine purchase decisions in 70%, and constitute 30% of participation in product-related costs.

Customer as an element of intellectual capital of a bank, influencing its value

In the past, deliberations on bank's capital concentrated mainly on sources of capital gaining (equity and depth). Nowadays, Polish and world banks face the new reality in which the notion of

bank's capital does not mean only financial and tangible capital. Intellectual capital of a bank is becoming more and more important nowadays. It concerns intangible aspects of a bank's activity, i.e. human, organizational and customer (customer relations) capital. Customer capital is a relatively new term, which has not been explicitly defined, measured and assessed yet, as M. Capiga (2005) emphasizes. However, in the subject literature it is understood as customer relations capital (Capiga, 2005., Blattberg, Getz, Thomas, 2004).

Treating the customer and customer relations as the company's resource which determines its market value, stems from the fact that the customer guarantees future cash flows and determines the company's market power by decreasing the insecurity of its activities and stabilizing its position on the market in the long term. Customer relations influence the bank's value, because they enable banks to accelerate and increase cash flows, to reduce the vulnerability and volatility of cash flows, and to increase the residual value of the bank. The acceleration of cash flows is a consequence of the faster reaction of customers to bank's marketing activities. Customers who have lasting relations with the company decide to purchase a new product offered by the company faster, they accept it faster and recommend it to others. Such customers are also involved in the contribution to offer (innovation) of a given financial institution, and this results in a shorter time required to develop new products and introduce them on the market. As a consequence, the offer is quickly available to customers who want to purchase it.

As it has been noticed, an increase in bank's value may result from an increase in cash flows. Lasting relations with the bank are of great importance here. Customers closely related to their service provider are prone to pay more, accept an increase in prices easier and take advantage of a wider range of services (cross-selling). These customers often choose more expensive offers of a given bank, providing greater value for the customer, which provide higher margins to the bank (up-selling). In the literature it is also assumed that the development of lasting relations leads to a more effective use of company's resources and a reduction in costs, which increases cash flows. It has been proved that lasting customer relations lead to a reduction in costs as the costs of marketing activities are lower (attracting new

customers is from six to ten times more expensive than their retention); lower costs of service (banks are familiar with their long-standing customers and their expectations, they know how to get through to their customers and predict their behaviour); a reduction in costs of attracting new customers in place of lost ones due to a high level of retention; lower costs because of cross-selling (the purchase of complementary products) and up-selling (the purchase of high quality substitution products); a reduction in costs of promotion campaigns thanks to positive recommendation of long-standing customers and lower costs related to the necessity of improving improperly provided services. Also, lower costs enable to increase cash flows.

Another source of an increase in bank's value is the reduction of vulnerability and volatility of cash flows. Stable and more predictable cash flows have a greater current net value and, in consequence, they increase value for shareholders. Lasting customer relations are of vital importance also here. Establishing lasting customer relations causes the reduction in volatility of cash flows due to the fact that costs of customer retention are easier to predict than costs of attracting new customers. Customer satisfaction resulting from previous positive product-related experiences influences a reduction in costs of gaining information on the offer during the subsequent purchase and a reduction in the purchase-related risk, thus it increases the probability of subsequent purchase. It is especially important in case of banking services as their purchase is connected with a high risk perceived by customers. Numerous studies on marketing prove that long-standing and loyal customers are less sensitive to competitors' activities. Customer loyalty, as a rare and difficult to imitate resource of a company, is a barrier to competitive subjects wishing to enter the market. It also makes cash flows more predictable and stable. The vulnerability and volatility of cash flows are also reduced by loyalty programmes. Taking into account the purchase cycle of a given category of a product, such programmes make it easier to predict the amount of cash flows in the future and to ensure their stability. A similar effect can be produced by creating barriers preventing customers from defecting or increasing costs of changing service providers. These barriers can be physical and result from providing the customer with a properly designed offer which the competition cannot provide. They can also be based on financial incentive, i.e. the possibility of getting an attractive price on condition of signing

a fixed term agreement – the so-called economic barrier. Owing to this fact, the probability of stable cash flows in the intended time increases. Finally, these barriers are often connected with the creation of security and trust towards the bank or membership in a particular community, which discourages the customer from changing it (the so-called psychological barrier).

The bank value is also determined by an increase in its residual value, i.e. the value of future cash flows from the period outside forecast. There is a high probability that long-standing, satisfied customers will continue their cooperation with a given financial institution and purchase later on. Moreover, as it has been noticed earlier, they can become interested in a wide range of products offered by a given subject. Such customers contribute to the development of the bank in the long term by recommending it to potential product purchasers, thus boosting the process of the offer adaptation to the market. Long-term customer relations guarantee a greater stability of the bank, create entrance barriers for competitors and the resultant lower capital cost, which leads to an increase in the residual value of financial institutions.

Having agreed on the role of the customer as the bank's resource which determines its value in the long term, we have to assume that this resource, just as any other resource at the company's disposal, must be properly managed and developed, i.e. it has to bring the shareholders the biggest possible rate of return. Moreover, it requires proper investments. The customer management process should include three stages (Berger, Bolton, Bowman, Briggs, Kumar, Parasuraman, Terry, 2002):

1. The creation of a dynamic customer database;
2. The segmentation of customers;
3. The assessment of the life value of customer segments or particular customers;
4. The allocation of resources which will enable to maximize the customer portfolio value.

It has to be emphasized that the mentioned stages are mutually dependent and related. The value of customers is a dynamic construct which changes with time. It considerably influences company's marketing activities, it is their consequence and it depends on them. Therefore, it should be

perceived as an endogenous variable, which is modified along with the modification of marketing activities undertaken by the company.

Important and more important customer

In the subject literature there is not much research on the influence of customer relations on the value of companies, but its results indicate that relations should be established with "proper", from a given subject's perspective, customers (Reinartz, Krafft, Hoyer, 2003, Rust, Zeithaml, Lemon, 2000). Only then relations will translate into an increase in the value of a company. Although it may sound non-marketing, not all customers are equally important from a specific bank's point of view. Equal treatment of all customers can jeopardize the profitability of a market subject. Cooperating with unprofitable and unpromising customers and providing them with the same value as the more profitable customers can decrease the bank's value and shareholders' capital. Therefore, it should be emphasized that managing customers should concentrate mainly on attractive customers, attempts at transforming

unattractive customers into attractive ones, and, under exceptional circumstances, discouraging unwanted customers. Owing to the above, at present banks use advanced information technologies to analyze the profitability of customers and their long-term value, which enables to predict the future value of this resource with the aid of alternative scenarios of marketing activities. Because of this, a company can strive to increase long-term income from a given customer and a reduction in costs by a more effective and efficient use of financial resources. Moreover, by considering alternative marketing activities, a supplier can also identify new solutions and initiatives leading to an increase in customer value.

Assuming that not all customers are equally profitable to the bank, investments in customers should differ depending on their potential. It means that the value which the customer is provided with must be adjusted to the customer value for the bank. As it is presented in figure 1, there are four scenarios of the diversified value of customers and value for customers.

Figure 1 Value of customers and value for customers

Value of Customers	High	Vulnerable Customers	Star Customers
	Low	Lost Causes	Free Riders
		Low	High

Source: Gupta, S. and Lehmann, D. (2005), *Managing Customers as Investments. The Strategic Value of Customers in the Long Run*, Wharton School Publishing, USA, p. 44.

Star Customers get high value from the service of the bank. They also provide high value to the bank by way of high margins, strong loyalty, and longer retention time. The relationship is balanced, largely equitable, and mutually beneficial. It is a win-win situation where both customers and bank get superior value. In contrast, Lost Cause customers do not get much value from bank's service. These customers are usually marginal for the bank; their main value, if there are enough of them, is to provide the economies that come with greater sales. Absent economies of scale, if the company cannot migrate them to higher levels of profitability, it should consider either reducing its investment on these customers or even dropping them to other supplier. The other two groups of customers show unbalanced, and hence unstable relations. Vulnerable Customers provide high value to the bank but do not get a lot of value of bank's services. These may include newly acquired large customers and longstanding customers who, largely through inertia, remain loyal. These customers are vulnerable and prone to defect to competitors unless corrective action is taken. A bank can invest in these customers through better product offerings, additional services and related activities. Free Riders are the mirror image of the Vulnerable Customers. These customers get a superior value from using the bank's service but are not very valuable to the bank (Gupta, Lehmann, 2005).

Banks increase profitability of their customers and influence their stocks and thus increase their market value by creating, communicating and realizing competitive and profitable offers for customers. Therefore, the knowledge of profitability and unprofitability of every customer or market segment and their reasons is of key importance during the creation of competitive value for customers, which in consequence will influence the bank's market value. If a bank wants to be successful, its strategies have to consider value that customers are provided with and value they provide for the bank.

Value for bank customers

Effective management of customers should result in establishing lasting and profitable customer

relations. Building such relations involves investments related to preparing, communicating and offering customers exceptional values, which are impossible to get from competitive subjects and form the basis for their satisfaction. The basis of these relations is formed by the quality of offer, which at present is not understood as a set of technical parameters, but as a set of features important to the user (Opolski, Opolska, 2000), stemming from activities taken within the product and its brand, price policy, location, organization of marketing channels, customer service, and communication. At the same time, customers, who have different needs, will require different feelings and offers, if an exchange of values is to be mutually advantageous and translate into an increase in customer value for the bank.

There are three main sources of value: economic, functional and psychological.

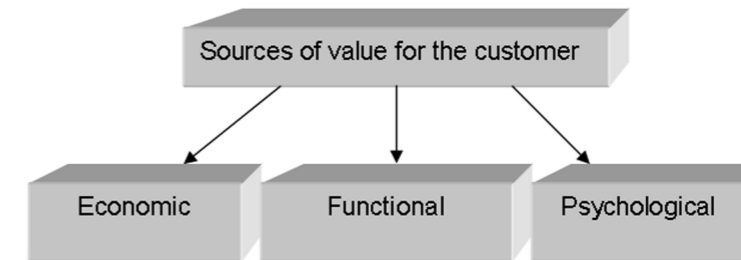
The offer provides value of economic nature when the bank can offer more profitable price conditions than competitors. This value is formed by financial benefits, which arise due to the purchase and use of a banking service. The economic value is assessed by comparing the total cost related to the use of a service in the long run, not only the initial cost of purchase. This value can be relatively easily compared to value offered by competitors.

The economic value is not the only and most important factor determining purchase and cooperation with a company. The following elements are also significant with reference to the service market (Gupta, Lehmann, 2005):

1. Compatibility – does the service cooperate with the system used by the customer?
2. Complexity – does the service offered by a given bank fully satisfy customer's needs?
3. Perception of tangible benefits delivered by the offer.
4. Financial and social risk related to the service.

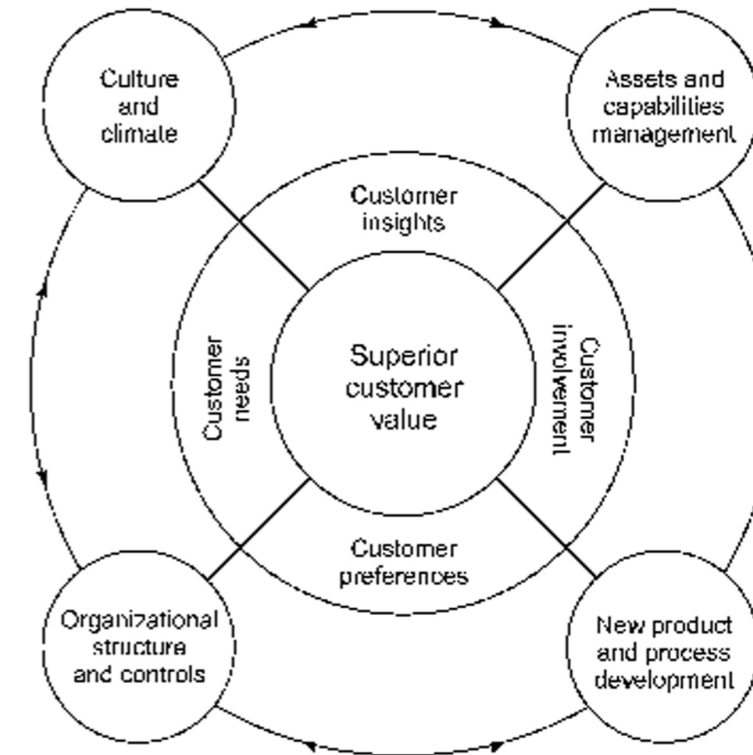
These elements constitute functional value. This value is defined by these aspects of an offer which deliver functional or useful benefits for the customer.

Figure 2 Sources of value for the customer



Source: Self-study on the basis of: Gupta, S. and Lehmann, D., Managing ..., op. cit., p. 116.

Figure 3 Innovative bank in the value for customer delivery process



Source: McDonald, M., Christopher, M., Knox, S. and Payne, A., Creating ..., op. cit., p. 89.

Both economic and functional values refer to tangible and relatively easily comparable benefits delivered by a service. As opposed to them, psychological value fully concentrates on intangible elements of an offer. On the market, where new ideas in the form of functional features and services as such are immediately copied by competitors, psychological value can be a key distinguishing factor. An increase in the market maturity, the servicization of the economy did not focus attention on a banking service as the only source of value for customer, but on a particular experience of the customer, who uses banking services and the resultant emotions and feelings. Currently, experiences of this type are considered the main source of value. Consumers' experiences make the consumption process the source of value as they purchase the offer not because of its physical features, but because of its symbolic meaning (Ponsonby, Boyle, 2004). The psychological value comes from personnel, the quality of service and bank's image. It causes the client to bear additional/higher costs in order to purchase a given product, although competitors offer a product whose economic and functional values are identical. Such a situation leads to the creation of a particular emotional state related to safety, trust, reliability, guarantee of flexibility, continuity (the continuation of cooperation) and the prompt realization of transactions.

Modern technologies are important element which should be focused on in the process of the creation and delivery of value for the customer in a way which is advantageous for the bank. Value for customer is created when offer of financial institutions is better, cheaper as well as more quickly and better delivered to the customer. At present, the fulfillment of these conditions requires the use of technological innovations at each level in the bank (figure 3). These innovations should foster the development of new solutions which would be appreciated by customers and could create value for them (McDonald, Christopher, Knox, Payne, 2001).

Technological innovations and the resulting solutions for the customer within the scope of organizational culture, structure and control, assets and capabilities management as well as the process of new services development can be the source of value for customers in a broad sense. Since they are multidimensional and influence one another, they have to be managed to support the

creation and maintenance of exceptional value for customers.

To sum up, it has to be noticed that striving for the maximization of customer satisfaction by providing customers with expected and distinctive values cannot depreciate the bank value. Benefits derived from customer relations should be received by both the customer and the bank. Due to such activities the latter has to be able to increase its value for its shareholders. Success is a mutually advantageous exchange of values. If a bank satisfies customers' needs by providing them with beneficial offer in the wide sense, customers will reciprocate with an expected level of profit for the bank in the long run.

Methodology

In order to identify which sources of value for customers (economic, functional or psychological) constitute the real value for a contemporary bank's customer in Poland direct research was conducted. The research was conducted by means of a computer aided telephone interview – CATI. The research was conducted all over Poland. It was carried out in mid-2007 and involved 1320 respondents, out of which 720 were personal customers, 600 were corporate customers, who used banking services in Poland. The research was conducted on a random and quota sample. The number of subgroups was selected in order to enable the comparison of results for particular groups of banks' customers. In the case of personal customers the choice of test was based on the structure of the population (the test was chosen according to the number of residents of provinces in Poland). As far as corporate customers are concerned the proportional choice was applied, taking into consideration the size of companies measured by the number of employees. 50% of interviews were conducted in small companies (up to 9 employees), 30% were conducted in medium-sized companies (from 10 to 49 employees), 20% in big companies (more than 50 employees, out of which 1 interview was carried out in a company of 251 employees and more). The assumption was that the interviewees had to be responsible for contacts with a bank.

Research results

The answer to the question about the choice of sources of value for customer (economic, functional or psychological) which constitute the real value for a contemporary customer of a bank in Poland, had to be preceded by the operationalization of variables, i.e. economic, functional and psychological values. In the research the author assumed four variables of financial nature, which constitute economic value:

1. lower interest rates of loans or higher interest rates of deposits,
2. short-term promotion campaigns, e.g. competitions,
3. loyalty programmes,
4. lower commission, charges.

The following was assumed for the source of functional values:

1. a wide range of banking services,
2. quick and efficient complaints procedure,
3. clear conveyance of information,
4. availability of a special telephone number; transfer of a designated employee to deal with customers,
5. multichannel access to an account,
6. individualization of offer and conditions of services.

Finally, the following variables were assumed as the sources of psychological value:

1. nice and competent service,
2. close cooperation and common work on the rules of cooperation,

3. frequent and mutual exchange of information between sides,

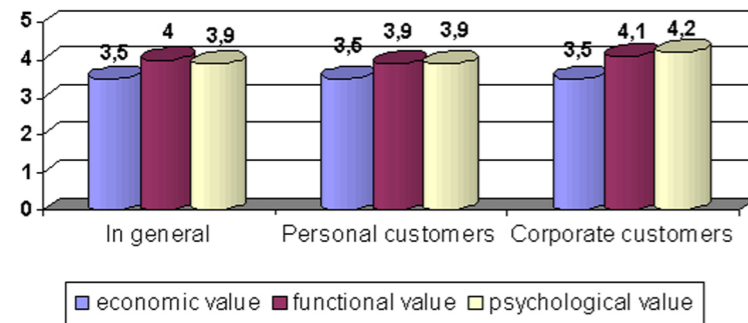
4. mutual involvement in improving and developing relations.

The conducted research indicated that customers, who use banking services in Poland, attribute almost equal significance to the functional value and the psychological value. It means that their decisions relating to establishing relations with a given bank are equally influenced by functional features of the bank's offer and the wide understood service, which provides the feeling of safety, partnership, trust, reliability and certainty. Also, it should be noted that companies which use bank's services attach more significance to these aspects in comparison with individual customers.

Larger differences in respondents' opinions were observed during the analysis of customers' assessment of their bank as far as the creation, communication and delivery of values for customers were concerned.

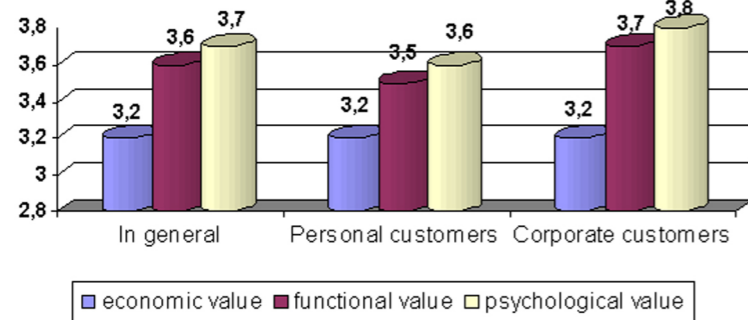
Customers of banking services in Poland are most satisfied with the psychological value provided by banks. The functional value was rated a little lower, although in this case it should be noted that companies which use banking services were more satisfied with this aspect of banks' activities. However, it was surprising to note a relatively low assessment of the economic value. This assessment is lower than the significance of these values in the process of customer relations development. It can result from the financial institutions' inability to communicate properly promotion campaigns of financial nature and convert them into an element distinguishing a given bank from competitors. This situation can also be caused by the fact that in case of financial services, customers do not pay much attention to price aspects. In the further research, 40% respondents stated that there is not need to use these elements of the bank's offer which could be the source of the economic value (chart 3).

Chart 1 Significance of particular sources of value for customers of banking services (X bar)



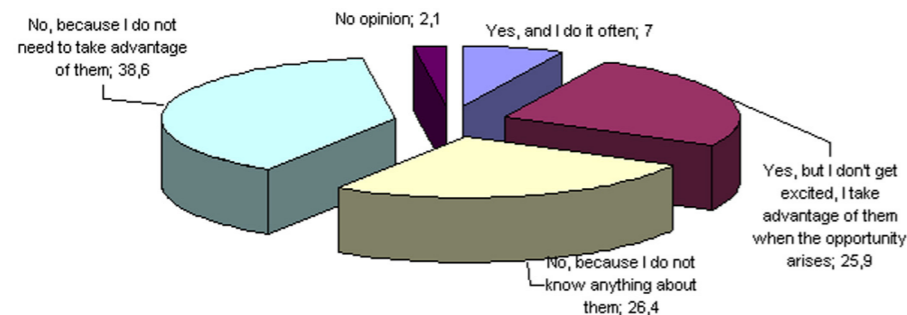
Source: Self-study

Chart 2 Assessment of separate sources of value for customers of banking services (X bar)



Source: self-study

Chart 3 Do you take advantage of economic promotion campaign offered by the bank? (in %)



Source: Self-study

Conclusions

The perception of customers as bank's resource, which determines its value, enables financial institutions to make appropriate and more profitable decisions. The development of information technologies facilitates, and sometimes even enables to manage customer's capital efficiently. It opens up possibilities of gathering and processing information essential to manage customer's capital and to calculate the value of customer relation accurately, which results in adjusting proper value to the customer. In consequence, these activities translate into an increase in banks' value. Customers of banking services in Poland consider functional values (features of offer providing customers with functional and useful benefits) and psychological values (positive experiences, emotions giving the feeling of security, certainty and trust) to be the most important sources of value. Thus financial tools which influence customers' behaviour (lower charges, commissions, loyalty programmes) turned out to be aspects that are not the focus of customers' attention when they establish lasting relations with a financial institution.

The conducted research provokes further search for sources of value for customers in different groups of banks, i.e. institutions which combine conventional and electronic customer service and banks which offer only electronic customer service. It would be interesting to identify sources of the psychological value when customers do not have direct and personal contact with bank's employees.

Questions

1. Why should a contemporary enterprise be perceived as the portfolio of customers?
2. How do customer relations influence bank's value?
3. What stages are included in the bank's customers management process?
4. What are the sources of value for the customer?
5. What are relations between value for customer and value of customer? Illustrate your answer with a specific example.

6. What constitutes the most important source of value for customers of banks in Poland? In your opinion, will changes happening in the European banking (technological, economic and social) cause a change in values expected by customers of banks?

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COMPLEMENTING INCOMPLETE DATABASES FOR MULTIDIMENSIONAL CUSTOMER SEGMENTATION

MAGDALENA KOTNIS
UNIVERSITY OF SZCZECIN

Abstract

The article presents the problem of the multidimensional customer segmentation and the incompletely database of customer behaviors and needs. To make a solid customer segmentation it's needed to filling of knowledge in the incompletely database. The problem of knowledge filling is frequently met in literature, but rarely exists with the context of incompleteness of data. The article presents the problem of incompleteness of data, selected methods of coping with incompleteness were described. The review contains various techniques of filling data and the proposal of the analytical methods/procedure for a customer segmentation in incompletely database.

Keywords: Poland, marketing strategy, CRM, customer behaviors, incomplete database, knowledge filling, data transformation

Introduction

Nowadays, one deals with market economy governed by two major forces, namely supply and demand. While enterprises have a profound influence on the quality and number of products offered on the market, it unfortunately turns out that their influence on the level of demand is minor.

The research question addressed in the project refers to problem encountered by every firm, i.e. profitability of business ventures. Research conducted in past two decades shows that growth in sales (achieved thanks to using analytical techniques for attracting and keeping a loyal customer) is a major factor increasing profits made by enterprises. Loyal customer buys more (Moorman, Zaltman, Deshpande, 1992), recommends the product to other customers (Swiss Reinsurance Co, 1994) and is able to accept growth in the price of a product (Massachusetts

Institute of Technology, 1998). Therefore, accurate identification of customer behaviour and needs should be the main objective established by every enterprise as it allows for managing relationship with a loyal customer effectively. Research on identification and analysis of customer behaviour enables a firm to concentrate its actions on these customers thanks to whom a firm will be profitable soon. Such research involves the analysis of multidimensional customer segmentation that groups customers according to the level of "loyalty." Multidimensional customer segmentation is a new subject and requires detailed analyses and methodological study. This gave rise to the article proposal. The article that would allow for defining research procedures adopted for customer relationship management.

The subject of the article also refers to complementing data in incomplete databases (phenomenon found commonly). Information is very often not saved in records due to technical problems or errors made by employees, and hence information concerning a customer and his/her behavior is incomplete. It is not easy to solve this problem as it requires employees to have extensive analytical and methodological knowledge of methods adopted and their sequence. There is a market need for devising the procedures – measures thanks to which customer identification and segmentation for a particular group of business entities will be carried out effectively.

Hence, the following question arises: what analytical methods/procedures should be used to identify (forecast) customer needs and behaviour effectively?

Concepts of data incompleteness

Information incompleteness is found commonly. One deals with it when he/she lacks certain

information pieces needed, and hence information is not precise or contradictory. The problem of incompleteness is also faced when one cannot confirm or deny the truth of a particular statement. Such situations very often result directly from describing the reality by means of conditional expressions, e.g. the result is rather good or imprecise expressions, for instance quite far. Errors and imperfections such as system failure or formulas filled in only partially may lead to loss of some data items and their incompleteness. Hence, in order to acquire real knowledge from information collected, one must take data incompleteness into account. Semantic variety of incompleteness is also a major problem as different kinds of incompleteness require using different techniques of data exploration.

Many concepts of data incompleteness interpretation have been presented in the literature on the subject. Bonnisone and Tong suggest dividing incompleteness into three types namely uncertainty, imprecision and incompleteness. On the contrary, Bosch and Prade propose other categories of incompleteness, i.e. uncertainty, imprecision, vagueness and inconsistency. Parsons suggests combining the aforementioned classifications and divides information incompleteness into the following five categories:

Uncertainty resulting from subjective errors and insufficient information concerning a particular problem.

Imprecision caused by applying improper degree of precision; does not involve situations when fuzzy notions are used to determine attribute value.

Incompleteness, i.e. lack of values needed.

Inconsistency arising when repeated descriptions of the same objects do not contain coherent data.

Ignorance, i.e. lack of knowledge referring to parameters of data sets in particular.

Issues relating to incompleteness in the scope of multicriteria customer segmentation were in the focus of the article. In the context of databases, data incompleteness issues were raised at the beginning of 1980's in the work by Lipski and Imilinski. In 1984 they presented the first complete solution for relational databases in the article entitled *Incomplete Information in Relational Databases*, "Journal of the ACM", volume 31. The article is still a point of reference for researchers

dealing with representing incomplete data in databases. The notion of data incompleteness is unanimously defined in the literature on the subject as a lack of data values. However, taken the analysis perspective into account, semantics of unknown values is not uniform. Two different senses of this notion may be distinguished, namely missing value and unavailable value.

Incompleteness of data

We face incompleteness of data every day. It exists when we lack part of needed information, thus it is inexact or contradictory. Problem of incompleteness also arises when we cannot confirm or reject truthfulness of statement. Such situations result directly from describing the reality by means of assuming expressions, such as: this is rather good result or imprecise: quite far. Also mistakes and imperfections, such as systems failures or partially filled forms can cause loss of part of data and be a cause of their incompleteness. Therefore, in order to obtain a real knowledge, cases of incompleteness must be considered. The significant problem is also semantic non-uniformity of incompleteness – various types of incompleteness require use of various techniques of data exploration.

In the context of databases, problematic of incompleteness was initiated in early 80-ties by Lipski and Imielinski. First complete solutions referring to databases was summarised in "Incomplete Information in Relational Databases", „Journal of the ACM", which is still a reference for works that deal with representation of incomplete data in databases. The idea of incompleteness is defined as lack of value. However, from the point of view of analysis, semantics of unknown values is not uniform.

Types of data incompleteness

The literature presents several divisions of imperfection, existing in information systems. Selected kinds are presented below.

In work by Bonnisson and Tong "Reasoning with Uncertainty in Expert Systems" problem of imperfection was divided into three types: uncertainty, imprecision and incompleteness. Uncertainty arises, when cannot state if given statement is true. imprecision arises, when precise answer cannot be given, for example if attribute

is presented in interval (for example population between 50 to 100 thousand), or in the set of possible values (for example colour is red, or orange, or pink). Incompleteness arises when value of analysed parameter is unknown.

The article *An introduction to Fuzzy Set and Possibility Theory Based Approaches to the Treatment of Uncertainty and Imprecision in Database Management System* proposed other categories of imperfection: uncertainty, imprecision, vagueness and inconsistency. According to this division, uncertainty arises when needed information is not available. Imprecision arises, when value has insufficient granularity, for example statement: commercial was about 5 minutes long is imprecise, if we are interested in specification of its duration time in every second. Vagueness arises when values are fuzzy, for example when quantitative attributes are described by qualitative statements, such as it weighs a lot. Inconsistency arises when analysed object is described by at least two inconsistent values.

The work of Parsons proposed joining of above-mentioned classifications. Imperfection was divided into five categories:

Uncertainty – results from subjective mistakes and insufficient informations, referring to given problem.

Imprecision – is caused by improper precision level; it does not include situations when fuzziness is used.

Incompleteness – lack of needed values.

Inconsistency – descriptions of the same objects do not contain consistent data.

Ignorance – lack of knowledge, referring mostly to parameters of datasets.

Data transformation

Missing data is a problem that refers to the process of discovering the knowledge, including methods of data exploration. Process of discovering the knowledge consists of the following stages:

- selection of data and initial processing,
- exploration,
- preparation of results for verification,

- verification of results.

It should be emphasised that interesting knowledge can be discovered not only by appropriate choice of algorithm of data exploration. Very important is also selection and preparation of appropriate data and usually these activities consume most time in the whole process of discovering knowledge. The overriding goal of this process is minimisation of GIGO, or garbage minimisation, in order to minimise the probability of wrong results. Phase of data selection and initial processing contains the following procedures:

Comprehensive analysis of the problem – in order to find and understand the nature of analysed problem and specification of result of process of knowledge discovering.

Selection of data – in order to create a dataset, from which it will be possible to obtain knowledge. this stage can be divided into three parts:

Creation or selection of appropriate datasets and choice of appropriate tables, records, attributes, etc.

Unification of format and analysis of data correctness.

Data transformation, initial processing – in order to obtain dataset with the highest possible quality:

Choice of strategy referring to missing data or their values, for example making decision referring consideration or not records with missing values.

Conversion of data types.

Transformation of data to appropriate form, for example discretisation of continuous values, change of representative form into transactional one.

First two stages are realised with the expert knowledge that decides, which data should be considered during the process of data exploration. The next stage is data transformation, or change of dataset into such form, in order to make it consistent and complete. To achieve this, many methods are used. These methods change empty records with variables that are the closest to the real ones.

Methods of knowledge filling

Methods used on the stage of transformation of data are used to remove incompleteness of data. Performed on this stage data analysis is not directly connected with just discovering knowledge, which is performed on the stage of data exploration.

The easiest method of removing incompleteness is omitting objects that contain at least one unknown element. In case of transactional data we can just not consider its undefined part. This method by default assumes that remaining data are sufficient for knowledge referring to the whole dataset, what is not necessary true. More practical are techniques of substituting unknown value of the element of object description by the value from the domain of corresponding attribute. The easiest and most popular methods are:

- use of constant, global value – to the domain of the attribute a new value is added, of from attribute domain we select value that does not exist in real data,
- replacement of missing values by mode for objects containing description defined for given attribute or use of mean value for continuous attributes,
- replacement of missing values by mode for objects belonging to the same class as analysed object and containing description defined for given attribute or use of mean value for continuous attributes.

Data is also filled using more advanced methods. One of them is KNNI method (k-nearest neighbour imputation). It consists of searching for nearest neighbours or analysed object o and on the basis of values existing in found neighbours' descriptions, filling this object. For relational data the KNNI algorithm can be presented as follows:

1. Divide relational database into two subsets: DRN, containing records, in which at least one value is unknown and DRZ, containing remaining records.
2. For every object described by record r DRN:

- find k nearest neighbours, described by records belonging to the DRZ set; distance between objects is calculated only by means of values known in r and corresponding values in complete records.
- fill unknown values in record r on the basis of found complete records.

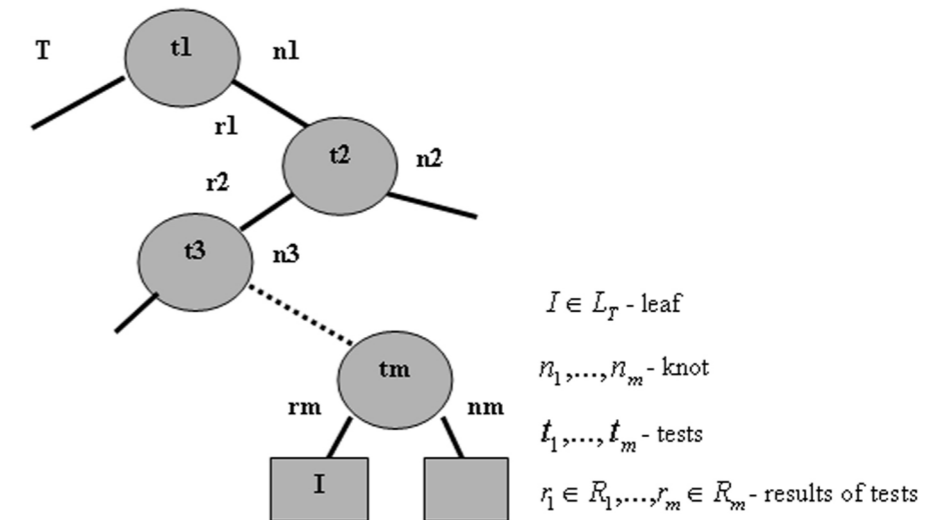
Distance between objects is calculated by means of various measures of distance: Euclidean, Manhattan, Minkowski, Hamming, etc. Unknown value of nominal attribute is generally substituted by mode, while missing value of continuous attribute is filled by mean. Both these values are calculated on the basis of corresponding values, existing in found records.

The second known method of filling missing values is approach based on decision tree imputation. In presented approach relational database DR is also divided into two subsets, as in the KNNI algorithm. Next, for every attribute a, for which records contain unknown values, a decision tree Dta is created. This tree is constructed on the basis of subset DRZ, while every value that exists for attribute a in records belonging to the subset DRZ creates decision class represented in this tree. Unknown value for attribute a in incomplete record rN is substituted by valuer resulting from decision class, to which this record is assigned by Dta tree. If record rN misses values of several attributes, they can be filled by means of two methods:

1. Simultaneous filling of values – missing data for every attribute a is filled by value resulting from classification of original record rN by decision tree Dta.
2. Sequential filling of values – for every attribute a, for which value in analysed record is unknown, classification of record rN by corresponding decision tree Dta is performed. Next, in record rN only this attribute is filled, for which during classification leaf was created on the basis of the largest set. Sequence of these two steps is repeated for modified record rN, until all missing data will be filled.

The following examples shows the decision tree of the probability approach:

Figure 1. Decision tree of the probability approach.



Source: Own study based on Dardzińska-Giębocka A., Chase Method Based on Dynamic Knowledge Discovery for Prediction Values in Incomplete Information Systems, Warszawa, 2004.

For examples, the probability of finding the leaf I (without of the missing values) is:

$$P(I | x) = P(t_1(x) = r_1) \cdot P(t_2(x) = r_2 | t_1(x) = r_1) \cdot \dots \cdot P(t_m(x) = r_m | t_1(x) = r_1, \dots, t_{m-1}(x) = r_{m-1})$$

If the results of tests are known (x not included missing values), the probability of getting the leaf is 0 or 1.

If the test tk in the knot nk in not exactly determined (missing values exists), we can take the probability of the factorisation Ω is following:

$$P_{x \in \Omega}(t_k(x) = r_k | t_1(x) = r_1, \dots, t_{k-1}(x) = r_{k-1}) = \frac{|U_{r, n_k}^{t_k}|}{|U_{r, n_k}^{t_k}|}$$

In work "Chase Method Based on Dynamic Knowledge Discovery for Prediction Values in Incomplete Information Systems", chase algorithm was proposed, in which data was filled using set of rules. Database DR is also divided into two subsets, as in the KNNI algorithm, and unknown values of attributes are notations that are to be learnt. In this case notations are described by rules created on the basis of set DRZ. Unknown values of attributes are replaced by value resulting from rules describing these notations. It is assumed

that set of rules contains only non-contradictory rules. In the chase algorithm data is filled after consideration of all attributes, for which unknown values exist. Such approach does not guarantee that all lacking data will be filled – it may happen that given notion is not described by any rule.

In the study "Maximum consistency of incomplete data via noninvasive imputation" was proposed a new method of filling data. The method was based on relation of tolerance. It specifies subset of similar objects that can be written in relational database. Two objects are in relation of tolerance if they possess the same known values of description for certain subset of attributes. Presented in these work algorithm iteratively fills missing values. Every iteration consists of the following steps:

Creation of set of objects, specified by relation of tolerance with use of all attributes.

For every unknown value * for attribute a in description of object x, creation of set m, containing known values w known that exist in description of objects y, being in relation of tolerance with object x. If $|m| = 1$, then value * in description of object x is substituted by value from set m. Algorithm stops when all unknown values are substituted or description of objects does not change after second step of a loop. Algorithm leaves unknown values in objects description, if there was not any value w_known or if referring set m contains more than one value.

In following studies: "Modeling and Imputation of Large Incomplete Multidimensional Datasets" and "Learning Missing Values from Summary Constraints" is considered a problem of filling missing data in data cubes used in data warehouses. In the first study static models are used for filling values, while the second study proposed techniques based on linear algebra and constraint programming.

There are also procedures that substitute missing data for given attribute with set of all values for this attribute in analysed set or in certain subset, for example in records belonging to the same class as record containing unknown value. Often there is calculated probability of every of these values in place of missing data. Such approach was used e.g. in, where algorithm ERID (Extracting Rules from Incomplete Decision Systems) was presented. It was used to detect rules in incomplete relational data.

Role of right knowledge filling for customer segmentation

Customer segmentation is made for the purpose of market strategy that every enterprise adopts. Such analytical actions are taken within CRM systems and aimed at faster and more effective response of enterprise to customer needs and demands. Very usefully and right is to form a procedure of methods used to complement incomplete databases and classify customers for the purpose of devising the marketing strategy. To get the results of the research more solid, all analytical methods classified should be assessed

with the use of AHP and SWOT methods aimed at determining to what extent particular methods are useful in customer analysis and segmentation.

The final effect of the recognizing of the methods of knowledge filling should be a research procedure for conduct (tree diagram of methods) that can be used many times by business entities offering credit cards to carry out multidimensional customer segmentation.

The research procedure requires first taking certain actions, i.e. elements of the process of complementing the knowledge in incomplete databases as well as multidimensional customer segmentation. The analysis should be based on the following four steps:

1. Classification of methods: method for complementing incomplete data and customer segmentation method
2. Assessment of the methods with the use of a particular set of criteria (AHP and/or SWOT methods are suggested)
3. Working out the research procedure for the analysis of data from incomplete data sets aimed at customer segmentation

The following actions were assigned to the aforementioned steps:

1. Classification of methods: method for complementing incomplete data and customer segmentation method
 - Extensive analysis of problems aimed at getting to know and understanding the issue discussed as well as determining the result of multi-criteria customer segmentation.
 - Description of methods for complementing data in incomplete databases and consumer segmentation.
2. Assessment of the methods with the use of a particular set of criteria (AHP and SWOT methods are suggested)
 - Defining the criteria determining the usefulness of methods classified (taken the area of activity conducted).
 - Analyzing the assessment made with reference to the application of particular methods to business activity pursued by credit firms. The

analysis will be carried out with the use of AHP and SWOT methods.

3. Working out research procedure for the analysis of data from incomplete data sets aimed at customer segmentation

- Results of analysis made with reference to the application of methods for complementing the knowledge and carrying out customer segmentation will indicate methods that are most accurate for complementing missing data, due to which multi-criteria customer segmentation is made.

The research procedure for conduct established can be used in analytical CRM systems. CRM (Customer Relationship Management) systems are adopted to manage the relationship with a customer. Customer analysis, also known as multidimensional customer segmentation, is one of analyses carried out in analytical CRM systems. Furthermore, the following analyses are made in CRM systems: customer value analysis, need analysis, basket analysis, sales analysis, customer satisfaction and loyalty analysis. The aforementioned analyses are aimed at responding to customer needs and behaviour through devising effective marketing strategy. That is why such a procedure for conduct will be used by all business entities offering credit cards and striving after growth in sales through customer relationship management.

The research procedure of customer segmentation in incompletely databases

The process of data completion to customer segmentation shows the figure 2. To filling knowledge in incomplete database it's needed to recognize and identify of subject area. It means, each data in sets describes some special subject who have own character and essentiality for the refilling knowledge. To get the needed knowledge it's necessary to identify of type of missing data and use the right method to data completion. Using the right data completion method makes sure getting the real knowledge about real customer behaviors and needs and also about the rules which direct the customer behaviors at all.

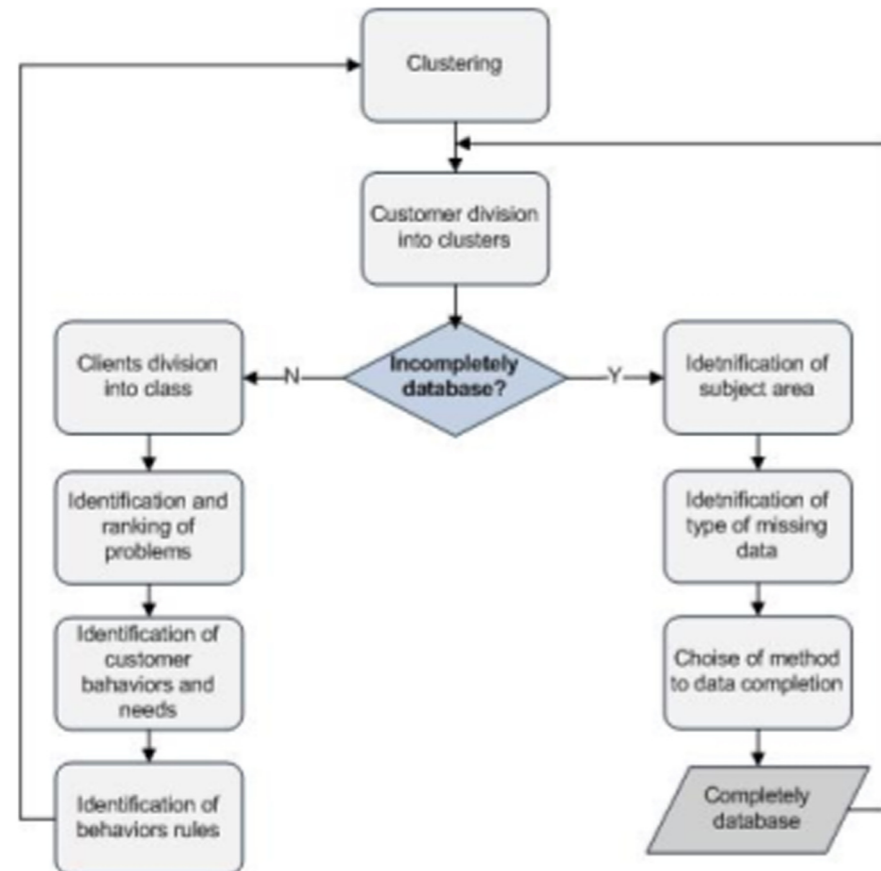
Each reason for it we have to get the knowledge by refilling of incompletely databases needs to recognize and choose the right method of knowledge completion. For examples: accurate identification of customer behaviors and needs should be the main objective established by every enterprise as it allows for managing relationship with a loyal customer effectively. Research on identification and analysis of customer behaviors enables a firm to concentrate its actions on these customers thanks to whom a firm will be profitable soon. Such research involves the analysis of multidimensional customer segmentation that groups customers according to the level of "loyalty." Multidimensional customer segmentation is a new subject and requires detailed analyses and methodological study. The research area (identification of customer behaviors and needs) should be the base knowledge about how to create the procedure (tree diagram of methods) to completion of additional knowledge. The procedure can be used many times by business entities to carry out for examples multidimensional customer segmentation.

Conclusions

Issues raised in the article are not new, although only one quite general and slightly structuralized methodology for revealing knowledge has been proposed so far. This is CRISP-DM (Cross-Industry Standard Process for Data Mining) methodology devised by a firm with Daimler Chrysler. This methodology provides one with a widely available process of adjusting data exploration to the general strategy for solving problems faced by business or research unit. This process is iterative and adaptation, due to which one can freely adjust stages in knowledge revealing (exploration). This is a general methodology for revealing the knowledge that does not take data incompleteness and the purpose for which knowledge will be used into consideration.

Acting in accordance with the methodology devised for a particular area/scope is an effective way of avoiding costly mistakes resulting from the fact that one does not understand methods and their usefulness.

Figure 2. Process of customer segmentation in incompletely data.



Source: Own study

Imperfection of data causes that it is not possible to precisely assign support of sets that is crucial problem in the process of discovering knowledge. Therefore recognition of methods of knowledge filling and their use in the process of discovering knowledge with particular consideration of scope and area of application of results of analysis is a significant element in the process of researches and analyses of macro- and microeconomic occurrences.

Questions

1. How many types of data incompleteness do you know?

2. Which methods do you think should be used to remove incompleteness of data?
3. Can you relate stages of process of discovering the knowledge consists ?
4. How do you think, why important is to know process of data completion to customer segmentation?

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POLISH E-COMMERCE

MAGDALENA SOBOŃ
UNIVERSITY OF SZCZECIN

Abstract

Since a substantial group of customers considers the comfort of making purchase required and preferred, e-commerce has been affecting the nature of commerce. These features, along with the increasingly common access to the Internet, cause an increase in an interest in e-shopping. More and more Polish customers buy online a wider range of products and services offered by numerous e-shops and auctions services. Due to the dynamics of e-commerce and its increasing role, both the directions of its development and its future in Poland are worth examining. Although it is a new branch of commerce, it is exceptionally dynamic and prospective.

This paper presents the situation and perspectives of the Polish e-commerce. It shows quantitative and qualitative changes and trends according to other authors and based on observations.

Trends in the Polish e-commerce are similar to the global ones, but not identical.

The similarity refers to an increase in the number of e-shoppers, online shops and the spread of e-commerce. However, a distinctive feature is the clear division of e-commerce into two sectors: sale via e-shops and sale via auction services, as well as extraordinary dynamics of its increase. The present situation is similar to the situation in e-commerce in other European countries some years ago when new forms of trade came into existence.

The value of the paper is that it shows comprehensively the situation in Polish e-commerce in the past and at present. It discusses characteristic changes and trends.

Keywords: E-commerce, trade, Internet, Poland

Introduction

Polish e-commerce is developing rapidly – it is one of the fastest developing markets.

Considerable potential resulting from the spread of new technologies is used by both, existing and new shops. Not only is the number of outlets and customers using modern methods of purchase growing, but also e-commerce is being introduced into new businesses and markets. Therefore, e-shops increase their turnout, thus gaining better financial results. E-commerce is strengthening its position and becoming serious competition for traditional commerce.

Internet as a basis for e-commerce development

According to the definition offered by A. Hartman, J. Sifonis and J. Kador, e-commerce is “a special kind of e-business undertaking focusing on single transactions, which use the Internet as an exchange medium, including relations between companies (business-to-business, B2B), as well as between a company and a consumer (business-to-consumer, B2C)” (Hartman, Sifonis, Kador, 2001). It means that e-commerce comprises all electronic transactions, regardless of the market they refer to, both in subjective and objective respect. Access to the World Wide Web and the use of its resources is a sine qua non in order to take advantage of e-commerce.

The use of the world web is becoming a popular phenomenon, enhanced by the progressing computerization and an increase in the number of owned appliances providing Internet access (a TV set, game console, mobile phone), a decreasing cost of Internet connection and a disappearing psychological barrier related to the use of modern technologies. In Poland a substantial part of households and a great majority of enterprises have Internet access, however, especially in the former case, the number diverges considerably from the numbers characteristic of most EU countries.

The year 2007 is characterized by the largest proportion of households with Internet access in history. More than 5.16 m. Polish households

have Internet access, what constitutes 40.98% of population at an increase by more than 57% in years 2004-2007. However, the greatest dynamics was observed a year later, when the rate of increase was six percentage points (GUS, 2008).

The number of households which have access to the Internet is still diverse and depends on a household income, a dwelling place and the number of children to support. The biggest group, in percentage terms, is constituted by the richest households consisting of nuclear families dwelling in cities. The largest disproportion is observed at the division of households according to their income, where 70% of households with the highest income have access to the Internet, while only 14% of households with the lowest income have access to the Internet.

Still the main reason, but losing its significance, why households do not have access to the Internet is a lack of necessity declared by 24.2%, while in 2006 this reason was given by 43%. Other important reasons include too expensive equipment and access as well as a lack of proper skills. A lack of technical possibilities of Internet connection, access to the Internet outside a dwelling place, aversion to the Internet, disability or privacy and security reasons are of minor significance (GUS, 2008).

Polish enterprises are far better equipped with the Internet access.

In 2007 they constituted 92% of all enterprises. However, the situation is diverse – it is the best in case of small and medium-sized companies operating as financial agencies, dealing with information technologies, and operating in the film, radio and television business.

E-commerce market in Poland

Polish e-commerce is not among the world leaders – in 2007 Poland took the seventh place in Europe

with regard to its value, with the turnover coming to 8 bn zlotys. It was another bull market year for owners of shops and auction services and the market increase was dramatic and steady: in years 2005-2006 it increased by 60%, in 2006-2007 by 62%. The value of e-commerce is estimated to exceed 12 bn zlotys at the end of 2008 (IAB Polska, 2008).

The feature of Polish e-commerce is a high participation of auction platforms in the turnover (57%). In 2007 they generated income of 4.6 bn zlotys including 3.47 bn zlotys generated by e-shops. Compared to the previous year this value increased by 54% and 74% respectively.

On the new and lively market of Internet shopping the number of commercial subjects is rapidly growing. In December 2006 there were 1796 shops in the Sklepy24.pl service catalogue, compared to about 2.5 thousand subjects dealing with e-commerce in Poland. At the end of 2007 their number increased to 3257, and it is estimated that in 2008 there are almost four thousand companies operating on the Polish e-commerce market (Internet Standard, 2008). Taking into account the fact that a part of them run more than one e-shop, the Institute of Logistics and Storage (Instytut Logistyki i Magazynowania) estimates the number of e-shops, which operate at present, at 6000. A bit more than one fourth of them have been registered in the Mazovian province, 10% in the Silesian province and 10% in the province of Małopolska, about 9% of e-shops are located in the province of Wielkopolska and the Lower Silesia (Dolny Śląsk) (ILiM, 2008).

The structure of a range of goods offered by Polish e-shops is diverse. They are mostly tangible products, however, services and electronic products are beginning to appear more often. Books and CDs, which were very popular a few years ago, have been replaced by home and garden articles, presents and accessories. Foodstuffs are still rare, but they are being offered more often.

Table 1. Internet access in Polish households in years 2004-2007

Internet access	2004	2005	2006	2007
Altogether	26	30	36	41
With regard to the number of children				
Households with no children	19	27	31	35
1 adult without children	-	-	16	17
2 adults without children	-	-	25	27
3 and more adults without children	-	-	49	59
Households with children	34	38	47	53
1 adult with children	-	-	38	40
2 adults with children	-	-	50	56
3 and more adults with children	-	-	46	52
With regard to dwelling place				
Towns above 100,000 residents	34	40	46	50
Towns below 100,000 residents	28	31	36	44
Rural areas	15	19	25	29
With regard to income quartiles*				
First quartile	10	11	17	14
Second quartile	19	22	28	28
Third quartile	30	31	45	48
Fourth quartile	50	60	73	72

* households are arranged according to the average monthly net income divided into four equal parts, from the highest to the lowest income

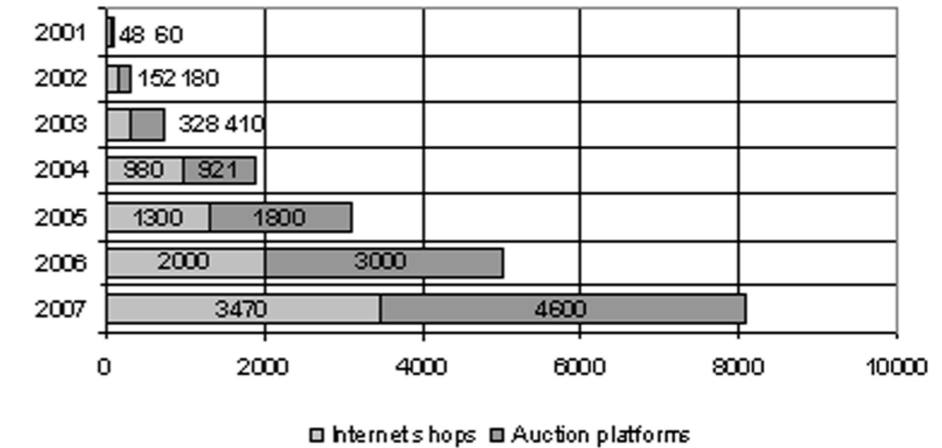
Source: GUS data, Wykorzystanie technologii informacyjno-telekomunikacyjnych w gospodarstwach domowych i wśród osób indywidualnych, GUS, Warszawa 2005-2008.

Table 2. Internet access in Polish companies in years 2004-2007

Internet access	2004	2005	2006	2007
Altogether	85	87	89	92
With regard to the kind of a business activity				
Industrial processing	84	85	88	-
Construction industry	82	85	89	-
Trade and repairs	85	87	88	-
Hotels and other accommodation places	83	85	89	-
Transport, storage and communication	89	91	91	-
Property services and science	91	94	93	-
Informatyka Information technology	100	99	98	-
Film, radio and TV business activities	96	98	98	-
Financial agencies	-	99	100	100
With regard to the number of employees				
Small (10-49 employees)	-	81	86	90
Medium (50-250 employees)	-	-	99	99
Large (more than 250 employees)	-	99	99	100

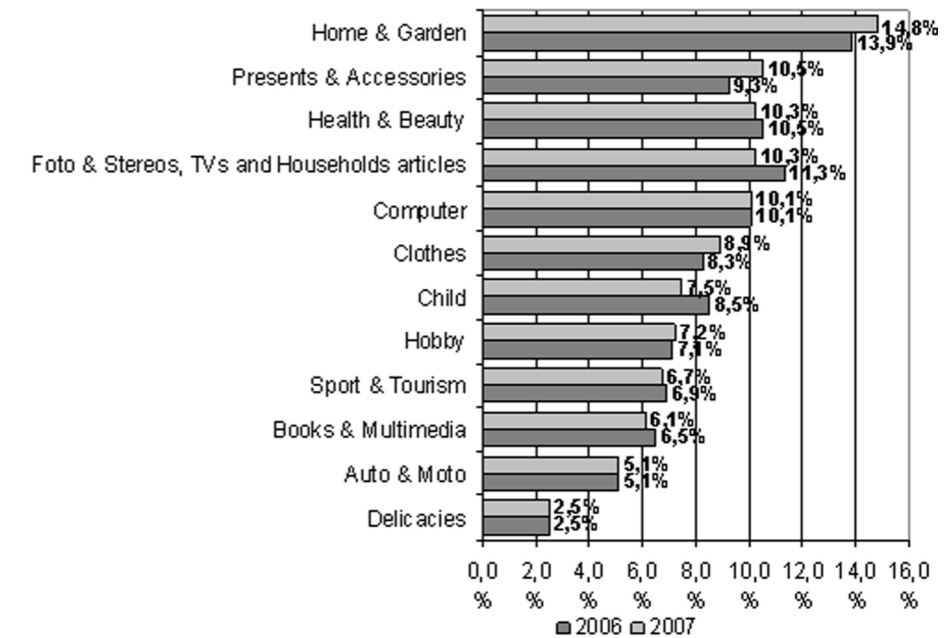
Source: GUS data, Wykorzystanie technologii informacyjno-telekomunikacyjnych w gospodarstwach domowych i wśród osób indywidualnych, GUS, Warszawa 2005-2008.

Graph 1. The value of Polish e-commerce market (in m. zlotys) Wartość polskiego rynku e-commerce (w mln zł)



Source: eCard, Allegro.pl, IAB Polska, Sklepy24.pl, Internet Standard

Graph 2. The structure of the products range offered by Polish Internet shops



Source: Raport E-commerce 2007, March 2008, Internet Standard.

The division of products offered by e-shops into electronic products, tangible products and services enables to conduct a detailed analysis in terms of range. The most popular among electronic products are ring tones for mobile phones and software.

Electronic equipment, household articles, stereos and TVs as well as computers are in the lead among tangible products. Hosting and domain sales prevail in case of services (ILiM, 2007).

Since the Poles are becoming more demanding and prone to do their shopping online, e-shops attempt to expand their range of products. Every third shop puts from one to ten thousand goods up for sale, and every eleventh shop has more than ten thousand goods for sale. The proportion of sellers offering a limited range of products is decreasing, however, minor sellers are still the biggest group. More than half of e-shops are small companies, whose monthly net sale does not exceed 10,000 zlotys.

For customers' convenience e-commerce offers different forms of payment for purchase made. In 91.6% of cases it is payment on delivery, 78.4% offer transfer to an account, 50.8% offer payment by credit card. Hire-purchase sale and payments via brokers are also present. (Gemius/Sklepy24, 2007).

Polish commerce shows a tendency to combine electronic and traditional forms. On the one hand, traditional commerce appreciates opportunities of e-commerce and opens Internet shops web sites (e.g. Alma – a foodstuff shop), but on the other hand, e-shops search for their place on the traditional market (e.g. the development of a traditional sales network by the Merlin.pl e-shop). According to InternetStandard.pl, in more than half of such cases (52.1%) the online sale is treated as an additional distribution channel. Most companies which operate thus, started selling goods online as it was a natural consequence of the development of a company which initially dealt only with traditional commerce.

Polish e-shops attempt to expand to foreign markets. Having reliable software and well-trying methods of operation at their disposal, they risk spreading to new markets. In order to extend the range of their operation they need to invest in computer and logistic infrastructure, they have to conduct large-scale promotional campaigns. If the necessary investment are beyond the owners'

means, they try to raise financial resources via the stock market (e.g. Agito.pl or Stereo.pl).

As e-commerce develops, companies strengthen their position in terms of obtained results – they participate in higher turnover and profit.

In 2007 a substantial part of subjects got results which were better by more than 30% than the results received the previous year. In case of turnover, it was 46% companies, while with regard to profit it was 42%.

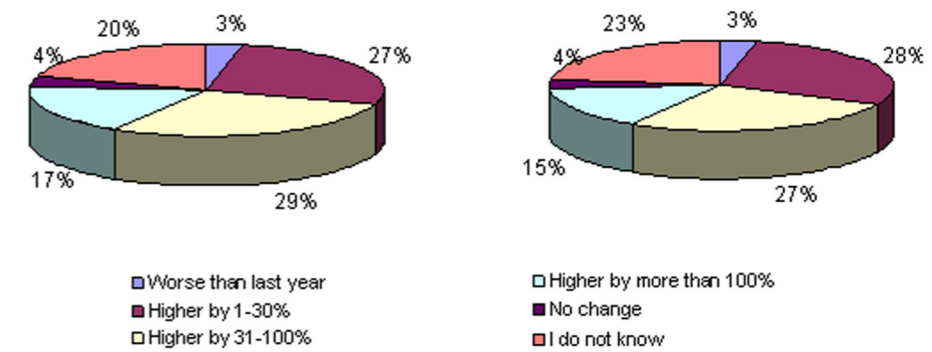
Polish e-customer

Due to a wide range and flexibility, e-commerce is becoming a more popular purchase channel. Both enterprises and households are customers of e-shops. The number of customers who make their purchase in online shops and via Internet auctions is increasing steadily and more quickly compared to the number of Internet users in Poland. It is important that more than half of online shoppers use price comparison sites. Online shopping has become the third most popular way to use the Internet, after searching for information and using e-mail.

According to Net Track, at the end of 2007, almost half of the Internet users in Poland did their shopping online, which means that the absolute number of online shoppers amounted to more than 5 m. people. Compared to the previous year, the number increased by 2.5 m. A dramatic rise in the proportion of online shoppers has been confirmed by e-commerce market research conducted by Gemius. It indicated that in 2007 66% of Internet users made at least one online purchase.

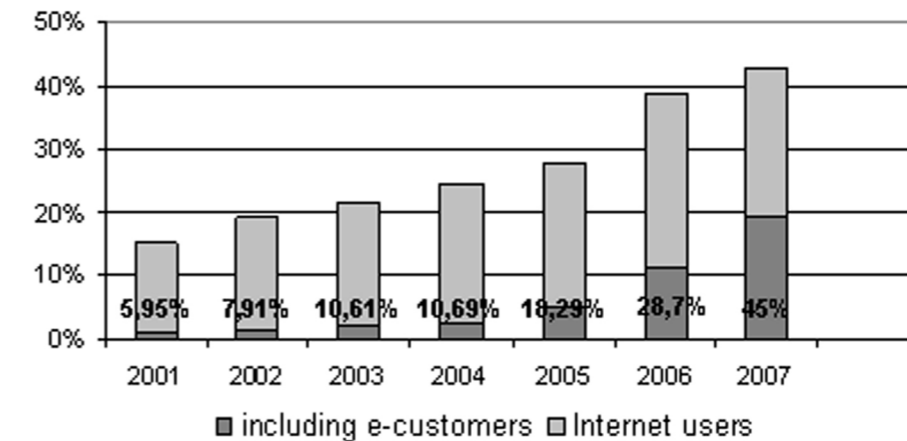
The research conducted by Cetelem shows that 18% of the Poles made online purchase at least once in their lives. In comparison to such countries as France, Great Britain or Belgium, the number is rather small, but the difference stems from poor access to the Internet in Poland.

Graph 4. The value of sales and the net financial result in 2007



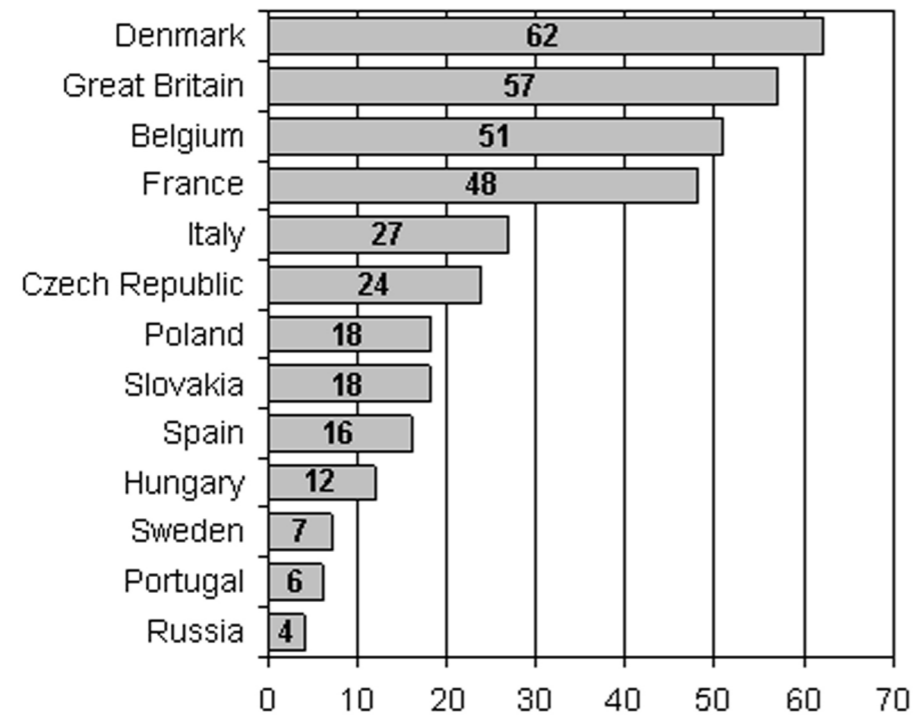
Source: Raport E-commerce 2007, marzec 2008, Internet Standard

Graph 5. Percentage of Polish e-customers in relation to Internet users



Source: Millward Brown SMG/KRC NetTrack, December 2000-2007, Megapanel PBI/Gemius, December 2004-2007.

Graph 6. Percentage of Internet buyers in relation to the number of residents in 2007



Source: Raport strategiczny IAB. Internet. Polska. Europa. Świat, 2008

Shopping at auction platforms are becoming more popular than at online shops. 24% of respondents make their purchase at auction platforms, while 42% of them buy at online shops. There is a big group of buyers, who have purchased both at online shops and online auctions (34%).

Online shopping is done by men more often than by women. They constitute 57% of shops' customers and 65% of online auctions' bidders. Young people are mostly interested in e-shopping – three quarters of e-shoppers are Internet users at the age of 15-24 or 25-39, and they constitute more than 80% of auction services bidders. The most frequent users of online shops are secondary school students, university students, managers, freelancers and office workers. The situation is similar in case of auction sites. (Gemius/Sklepy24, 2007)

In 2006 a statistical Pole at the age of 16-74 spent almost 100 zlotys on goods purchased via the

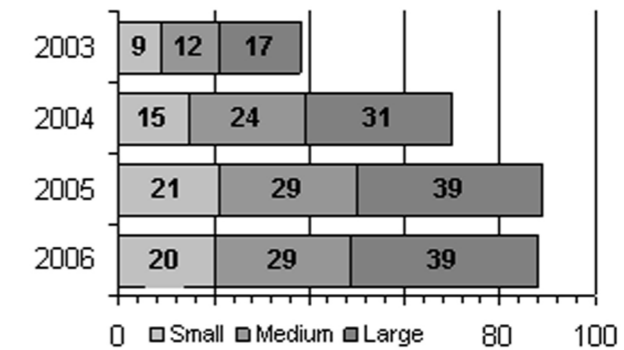
Internet. However, since only 12% of all people at this age made their purchase via the Internet, they spent more than 750 zlotys each. The sums increased in 2008. Only during one month almost half of the customers spent from 100 to 500 zlotys, some of them even more than 1,500 zlotys, and they often paid by credit cards and e-cards.

Online shopping is also becoming more popular among enterprises. While in 2003 only 10% of enterprises made their purchase via the Internet, in 2006 their number doubled (22%).

The dynamics of an increase in the number of enterprises buying via the Internet in years 2003-2006 was similar in companies of all sizes measured by the number of employees, but big companies used this form of purchase to the largest extent (39%). (GUS, 2007)

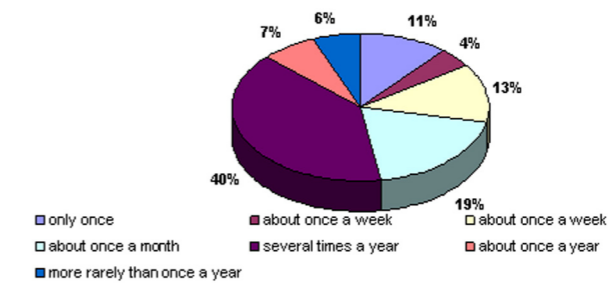
Apart from an increase in the number of e-shoppers, there is also an increase in the frequency of transactions.

Graph 7. Companies buying via the Internet in 2006



Source: dane GUS, Wykorzystanie technologii informacyjno-telekomunikacyjnych w przedsiębiorstwach w 2007 r., Warszawa 2007.

Graph 8. The frequency of online shopping



Source: Gemius SA / Sklepy24.pl, „E-commerce w Polsce 2007”, July 2007.

The largest group of purchasers is formed by those who buy several times a year, and more than half by a smaller group of people who purchase about once a month. The smallest group includes people who have visited e-shops once or made online purchase only once. It is interesting to note that according to D-Link Technology Trend research ordered by Millward Brown SMG/KRC, more than one third (36%) of all online shopping in Poland is done before Christmas.

The research conducted by Gemius indicates that the Poles like online shopping, since more than half have positive attitude towards it. They care about buying high quality products and saving money. Almost all Internet users are familiar with the idea of online shopping, and 70% of them have already made such purchase.

There are several reasons for online shopping. According to Sklepy24 service they include:

- ordering at any time of the day,
- delivery at the door
- saving time,
- lower prices on goods,
- greater availability,
- easy comparison of offers,
- a lot of information on products.

Internet users who do not shop online are most of all afraid of dishonest sellers, impossibility to check goods, limited knowledge about e-commerce and the online payment system. Among the most frequently mentioned problems with online shopping are:

- long delivery time,

- difficulties in finding the sought after product,
- improper customer service,
- a lack of essential information during purchase,
- dissatisfaction with received products,
- problems with a guarantee, complaints, returning of defective goods,
- false information on the web site,
- not getting the purchased product. (Gemius SA / Sklepy24.pl, 2007)

People are still prejudiced against transactions security, which is confirmed by the report on e-shops security prepared by Poznańskie Centrum Superkomputerowo-Sieciowe (PCSS). A substantial part of e-commerce providers have not secured their services properly, which may jeopardize the users and their money.

The future of e-commerce in Poland

The Polish e-commerce market has excellent development prospects. They are enhanced by:

- dynamic and increasing Internet saturation,
- the reconciliation of differences between earnings in Poland and other European Union countries,
- market globalization,
- more attractive sales offers, an increase in the number of shops and the streamlining of their operation,
- the popularization of charge cards and internet accounts, which facilitate direct bank money transfers.

An increase interest in online shops is also expected on the basis of declarations made by experienced online shoppers, as one third of them plan to buy online more often than so far, and 44% intend to purchase online as often as the used to. More than 97% of Internet users expect a rapid or moderate increase in the market, while just under 1% of the users are afraid of recession.

The development of e-commerce is a sign of our times. The things that facilitate this process (apart from the development of computerization and the Internet) are mostly competitive prices compared to traditional commerce, the certification of e-shops and competition on the market of courier services forcing companies to reduce prices on carriage services.

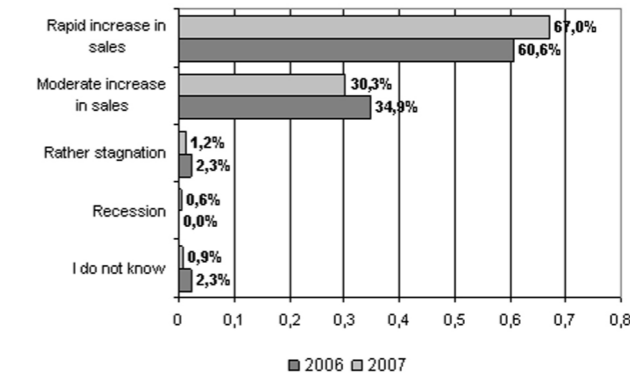
A lack of customers' confidence in modern sales methods and relatively high costs of goods dispatch act as a brake on the development of Polish e-commerce.

According to the forecasts, Polish e-commerce is expected to rise by more than 200% by 2010, thus increasing its share in the total retail sale to 4%.

Conclusion

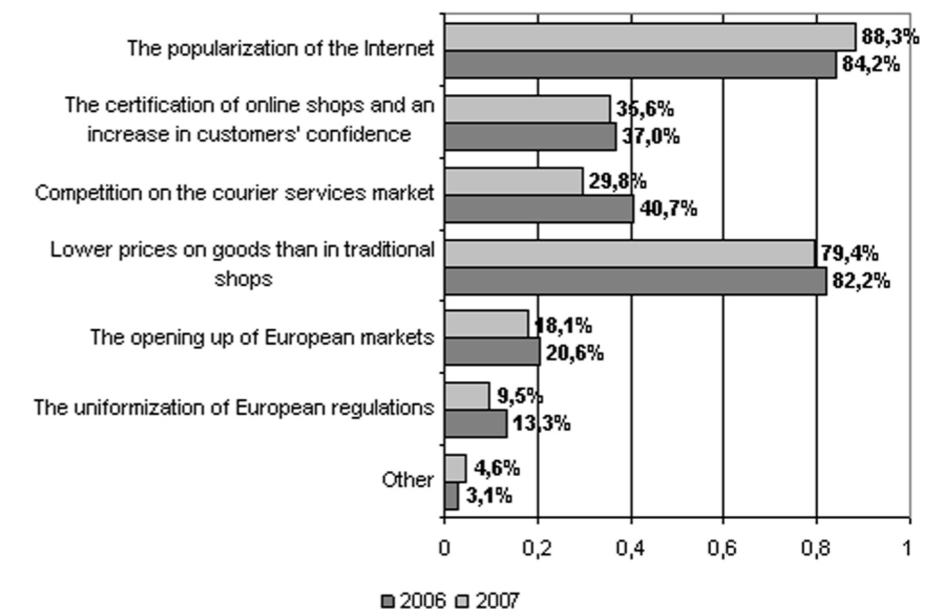
E-commerce, as a modern form of the turnover of goods and services, is becoming an inherent part of Polish commerce. Its development is caused by a change in customers' attitudes and market transformations. A considerable increase in transactions and e-customers makes it possible to make up for differences in comparison with highly developed countries. The Poles tend to use the Internet and buy online more often and more willingly. There are several reasons for this, e.g. easier access to computers and web sites, an increase in attractiveness of shops' offers and online auctions offers, which care about security and customer satisfaction.

Graph 9. Expected directions of Polish e-commerce development



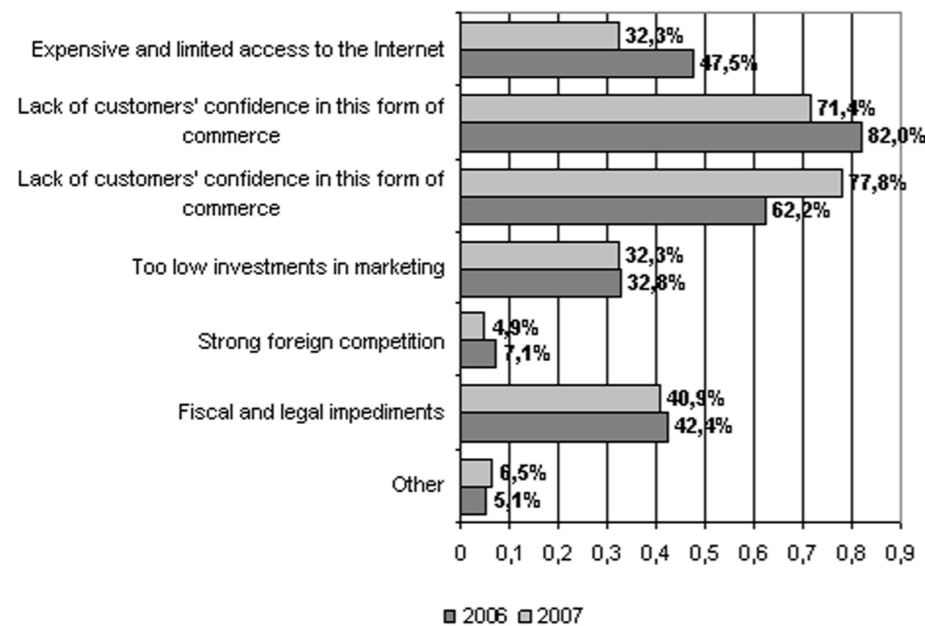
Source: Raport E-commerce 2007, March 2008, Internet Standard.

Graph 10. Factors supporting the development of e-commerce in Poland



Source: Raport E-commerce 2007, March 2008, Internet Standard.

Graph 11. Factors hindering the development of the Polish e-commerce market



Source: Raport E-commerce 2007, March 2008, Internet Standard.

Questions

1. What determines and differentiates access to the Internet in Poland?
2. Can you explain what kind of products and why are most popular in Polish e-commerce?
3. What is characteristic of Polish e-commerce?
4. Who is the typical e-customer?
5. What do you think Polish e-commerce will be like in the future?

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INNOVATION ACTIVITY OF ENTERPRISE SECTOR IN EUROPEAN UNION

KATARZYNA KOZIOŁ
UNIVERSITY OF SZCZECIN

Abstract

The aim of this article is to present the innovation level of the EU countries in 2006 and 2007. Particular emphasis was placed on Poland and its innovation level in comparison with other countries.

The article presents the results of the European Innovation Scoreboard – an instrument of the European Commission for the annual follow-up of the Lisbon strategy. The report includes data from the EU countries, the Associate countries, the Candidate countries as well as the US and Japan. The EIS provides a comparative assessment of the innovation performance of particular countries and presents progress on the road to the most competitive economy in the world. Sweden is the most innovative country. Together with Denmark, Finland, Germany, Israel, Japan, Switzerland, Great Britain and the USA, Sweden forms a group of innovation leaders.

The latest data shows that the US and Japan are still ahead of the EU, but the gap in innovation has been declining. The EU-US gap dropped significantly between 2003 and 2006 and shows a further reduction in 2007. The EU-Japan gap has also dropped since 2004.

Keywords: Innovations, European enterprises, Poland

Introduction

The European Union defines innovation as one of the most important factors which is going to determine the competitiveness of economy in the coming years. By the term 'innovation', one understands an ability and motivation of entrepreneurs to undertake a permanent search and take advantage of the results of this research, new ideas, concepts and inventions. Moreover, innovation involves improvement and development of production and operating technologies which

also refer to services, the application of new solutions in organization and management, progress in the development of infrastructure, and, first and foremost, information, with its gathering, processing accessibility (Janasz, 2007).

There are many reasons that have led to a broad discussion on the necessity of introducing a new programme of EU's economic reforms, as well as new innovation policy: new challenges connected with globalization and the growing competitiveness of other world economies such as the USA, Japan and China; the emergence of structural barriers to the economic growth in the EU countries and the subsequent slowing down of this growth; coupled with the EU's enlargement.

Innovation performance of EU Member States (on the basis of the Summary Innovation Index).

Innovation performance in EU countries

Research on the level of innovation performance, in particular EU countries, has been carried out since 2000 as part of the Trend Chart on Innovation in Europe programme which makes up the European Innovation Scoreboard (EIS) project. The EIS provides a comparative assessment of the innovation performance of particular countries and presents progress on the road to the most competitive economy in the world (European Innovation Scoreboard, 2002). The research started in 2000 and has been conducted annually in the EU27 Member States, three Associate countries (Switzerland, Iceland, Norway), a Candidate country Turkey and, since 2007, in Australia, Canada and Israel. It takes advantage of Eurostat, national statistical offices and the international organizations OECD, EPO, UNCTAD i WIPO .

The latest data comes from the 7th edition of the EIS 2007. It consists of 25 indicators which fall into 5 main categories (European Innovation Scoreboard, 2007):

- Innovation drivers (5 indicators).
- Knowledge creation (investments in human capital, R&D activities – 4 indicators).
- Innovation & entrepreneurship (innovation measurement at the firm level – 6 indicators).
- Applications (5 indicators).
- Intellectual property (5 indicators).

The first three categories show the input, the two remaining focus on the innovation output. On the basis of all indicators the Summary Innovation Index SII was prepared to assess the countries' innovation performance.

Sweden is the most innovative country. Together with Denmark, Finland, Germany, Israel, Japan, Switzerland, Great Britain and the USA, Sweden forms a group of innovation leaders. The second group, innovation followers, are Austria, Belgium, Canada, France, Iceland, Ireland, Luxemburg and the Netherlands. Australia, Cyprus, the Czech Republic, Estonia, Italy, Norway, Slovenia and Spain form the third group, i.e. moderate innovators. The last and the biggest group are catch-up countries and includes Malta, Lithuania, Hungary, Greece, Portugal, Slovakia, Poland, Croatia, Bulgaria, Latvia and Romania. Turkey is currently performing below the other countries included in the EIS (Table I).

Comparing the above results to the EIS 2006, the Scandinavian countries together with Germany, Switzerland and Japan were the innovation leaders. In 2007 Great Britain, the USA and Israel joined this group. Their innovation activity is well above the EU's average. Canada and Luxemburg joined the recent scoreboard countries from the second group (the USA, Great Britain, Iceland, France, the Netherlands, Belgium, Austria and Ireland). The two countries perform a bit better than the EU average (0,45) and the gap between them is so great. In 2006, Slovenia, the Czech Republic, Portugal, Poland, Latvia, Greece and Bulgaria were the catch-up countries. A year later Croatia, Hungary, Malta, Romania and Slovakia joined the group whereas Slovenia and the Czech Republic left it. These latter countries together with Estonia, Australia, Norway, Italy, Cyprus and Spain form the moderate group. The performance of the catch-up countries is poor, significantly below the EU's level, but one can notice a general growth of innovation

in this group. In 2006 Cyprus and Romania formed the fifth group of fast catch-up countries, since they were slower than the others (Cyprus is the smallest EU country, Romania started from a very low level). Turkey, as in the previous year, did not manage to get into the group: the country's performance is the lowest, too weak even for the last group.

Analysis of the EU innovation gap with the USA and Japan

The latest data shows that the US and Japan are still ahead of the EU, but the gap in innovation has been declining. The EU-US gap dropped significantly between 2003 and 2006 and shows a further reduction in 2007. The EU-Japan gap has also dropped since 2004.

The USA performs better than the EU in 11 indicators, while the EU scores above the USA in 4 indicators (S&E graduates, employment in medium-high and high-tech manufacturing, community trademarks and community designs). Japan performs better than the EU in 12 indicators, while the EU only scores above Japan in 2 indicators (community trademarks and community designs). One has to remember that although the USA is leading in 11 indicators, on 9 of these indicators the USA is outperformed by some individual European countries (e.g. Triad patents per million population: the EU 19,6; the USA 33,9; Switzerland 81,3; Germany 53,8; the Netherlands: 47,4).

In only two indicators does the USA perform better than all the European countries: population with tertiary education and USPTO patents. The gap can be explained by Europe's two poor indicators: USPTO patents and population with tertiary education. Japan performs better than the EU in tertiary education, USPTO and EPO patents as well as triad patenting.

In 2006 the EU performed better than the USA in 4 indicators (population with technical tertiary education, employment in medium-high and high-tech manufacturing, number of new community trademarks, number of new community designs). However, Japan performed better than the EU in 11 indicators, while the EU only scored above Japan in 3 (share of medium-hightech and high-tech R&D, number of new community trademarks, number of new community designs).

Table I. SII 2007 – results

EU	0,45	Netherlands	0,48
Israel	0,62	Austria	0,48
Belgium	0,47	Poland	0,24
Czech Republic	0,36	Portugal	0,25
Denmark	0,61	Slovenia	0,35
Germany	0,59	Slovakia	0,25
Estonia	0,37	Finland	0,64
Greece	0,26	Sweden	0,73
Spain	0,31	United Kingdom	0,57
France	0,47	Bulgaria	0,23
Ireland	0,49	Romania	0,18
Italy	0,33	Turkey	0,08
Cyprus	0,33	Iceland	0,50
Latvia	0,19	Norway	0,36
Lithuania	0,27	United States	0,55
Luxembourg	0,53	Japan	0,60
Hungary	0,26	Switzerland	0,67
Malta	0,29	Croatia	0,23
Australia	0,36	Canada	0,34

Source: European Innovation Scoreboard 2007. Comparative Analysis of Innovation Performance, Pro Inno Europe, 2008, p. 07

Table II. Leaders of innovation changes in the EU in comparison with the USA and Japan (2007)

Dimensions	EU	European "Innovation leaders"			US	Japan
		IE (24.5)	FR (22.5)	LT (18.9)		
1.1 S&E graduates per 1000 population aged 20-29	12.9				10.6	13.7
1.2 Population with tertiary education per 100 population aged 25-64	23.0	FI (35.1)	DK (34.7)	NO (33.6)	39.0	40.0
1.3 Broadband penetration rate (number of broadband lines per 100 population)	14.8	DK (29.6)	NL (29.0)	IS (28.1)	18.0	18.9
2.1 Public R&D expenditures (% of GDP)	0.65	IS (1.17)	FI (0.99)	SE (0.92)	0.69	0.74
2.2 Business R&D expenditures (% of GDP)	1.17	SE (2.92)	FI(2.46)	CH (2.16)	1.87	2.40
2.3 Share of medium-high-tech and high-tech R&D (% of manufacturing R&D expenditures)	85.2	SE (92.7)	DE (92.3)	CH (92.0)	89.9	86.7
3.4 Early-stage venture capital (% of GDP)	0.022	DK (0.051)	UK (0.047)	FI (0.044)	0.035	-
3.5 ICT expenditures (% of GDP)	6.4	BG (9.9)	EE (9.8)	LV (9.6)	6.7	7.6
4.2 Exports of high technology products as a share of total exports	16.7	MT (54.6)	LU (40.6)	IE (28.9)	26.1	20.0
4.5 Employment in medium-high and high-tech manufacturing (% of total workforce)	6.63	DE (10.75)	CZ (10.33)	SK (9.72)	3.84	7.30
5.1 EPO patents per million population	128.0	CH (425.6)	DE (311.7)	FI (305.6)	167.6	219.1
5.2 USPTO patents per million population	49.2	CH (167.5)	FI (133.2)	DE (129.8)	273.7	274.7
5.3 Triad patents per million population	19.6	CH (81.3)	DE (53.8)	NL (47.4)	33.9	87.0
5.4 Number of new community trademarks per million population	108.2	LU (902.0)	CH (308.3)	AT (221.5)	33.6	12.9
5.5 Number of new community designs per million population	109.4	DK (240.5)	CH (235.7)	AT (208.8)	17.5	15.2

Source: European Innovation Scoreboard 2007. Comparative Analysis of Innovation Performance. Pro Inno Europe, 2008, p. 016.

Table III. Leaders of innovation changes in the EU in comparison with the USA and Japan (2006)

Dimensions	EU25	EU15	European "Innovation leaders"			US	Japan
			IE (23.1)	FR (22.0)	UK (18.1)		
1.1 New S&E graduates per 1000 population aged 20-29	12.7	13.6				10.2	13.4
1.2 Population with tertiary education per 100 population aged 25-64	22.8	24.0	FI (34.6)	DK (33.5)	EE (33.3)	38.4	37.4
1.3 Broadband penetration rate (number of broadband lines per 100 population)	10.6	12.0	IS (22.5)	NL (22.4)	DK (22.0)	14.9	16.3
1.4 Participation in lifelong learning per 100 population aged 25-64	11.0	12.1	SE (34.7)	UK (29.1)	DK (27.6)	-	-
1.5 Youth education attainment level (% of population aged 20-24 having completed at least upper secondary education)	76.9	74.1	NO (96.3)	SK (91.5)	SI (90.6)	-	-
2.1 Public R&D expenditures (% of GDP)	0.65	0.66	IS (1.17)	FI (0.99)	SE (0.92)	0.86	0.74
2.2 Business R&D expenditures (% of GDP)	1.20	1.24	SE (2.92)	FI(2.46)	CH (2.16)	1.87	2.39
2.3 Share of medium-high-tech and high-tech R&D (% of manufacturing R&D expenditures)	-	89.2	SE (92.7)	DE (92.3)	CH (92.0)	89.9	86.7
2.4 Share of enterprises receiving public funding for innovation	-	-	LU (39.3)	IE (27.8)	AT (17.8)	-	-
3.1 SMEs innovating in-house (% of SMEs)	-	-	IE (47.2)	IS (46.5)	DE (46.2)	-	15.3
3.2 Innovative SMEs co-operating with others (% of SMEs)	-	-	DK (20.8)	SE (20.0)	FI (17.3)	-	6.9
3.3 Innovation expenditures (% of turnover)	-	-	SE (3.47)	EL (3.08)	DE (2.93)	-	-
3.4 Early-stage venture capital (% of GDP)	-	0.023	DK (0.068)	SE (0.067)	UK (0.048)	0.072	-
3.5 ICT expenditures (% of GDP)	6.4	6.4	EE (9.8)	LV (9.6)	SE (8.6)	6.7	7.6

Source: European Innovation Scoreboard 2006. Comparative Analysis of Innovation Performance. Pro Inno Europe, p. 13.

The gap between economies can be reduced by an effective innovation policy at national and international level.

Poland in the EU

The smallest EU's countries dominate as far as innovation performance and competitiveness are concerned. Sweden is a leader in seven indicators, Finland in five, Denmark in four, Switzerland in five, both the Netherlands and Ireland in two.

Sweden was the most innovative country in 2006 and 2007 (in 2006 10 times in the top three, in 2007 seven times). Differences among many indicators are too small to distinguish a leader. There are, however, strong leaders in some areas: Lithuania (number of new community trademarks), Malta (exports of high technology products), Switzerland (EPO and USPTO patents, triad patents), Denmark (number of new community designs). These data are available in Tables II and III.

Analyzing the tables one can notice that Poland is not an innovation leader in any category. Poland occupies the 24th position among the EU27 states, and the 32th among 37 analysed countries. It is ahead of Romania, Bulgaria, Latvia, Croatia and Turkey. In 2006 Poland was the 22nd in the EU, and 29th among all analysed countries. Only in three indicators is Polish performance above the EU's average (% of population aged 20-24 having completed at least upper secondary education, ICT expenditures and sales of new-to-market products) (European Innovation Scoreboard, 2007).

The biggest of all the new EU members, Poland is one of the weakest as far as research, innovation and competitiveness are concerned. The country is comparable to Spain (in terms of area, population, development's level) in 1986, which is when Spain entered the EU. Spaniards have taken a lot of advantage of the EU and developed. In spite of this, Spain is economically still one of the weakest European countries. Poland has to face a long and difficult road to gain the economic development of e.g. Spain. Poland is far below the EU's average in, among others, EPO, USPTO and triad patents (5.1, 5.2, 5.3), exports of high technology products (4.2). However, its weakest points come from the

fifth category which focuses on the protection of intellectual property. There is a huge gap between Poland and the EU regarding EPO and USPTO patents (4 applications to EPO per million population in Poland and 128 applications to EPO in the enlarged EU).

Assessing each category individually, one can notice that in the first category (innovation drivers) there has been a positive steady growth of indicators, which shows a step towards development of economy and a society based on knowledge.

On the other hand, in the second category (knowledge creation) there has been a decrease of indicators, which is very worrying. In the case of business R&D expenditures, the level is generally very low in the whole enlarged EU but in Poland the expenditures are falling year on year. Generally, the situation of R&D expenditures in Poland is not beneficial: private investment for R&D are half as much as budgetary investment, unlike in developed EU countries (private investment are the basis for R&D actions here). Analysing the report data it is noticeable that Poland is not a innovation leader in any category.

To summarise, the biggest of new EU members – Poland – is one of the weakest countries when it comes to research, innovation and competitiveness. The effectiveness of an organization is to a great extent determined by its innovation activity. The innovation activity of a country not only determines the innovation of their entities, but it also is its outcome. Thus, there needs to be some positive changes in Poland in the near future, i.e. the promotion of innovations, higher business R&D expenditures, more money for national research and new technologies, closer co-operation between the world of science and industry, development of diffusion of innovations.

Analyzing the results of SII in the last five years one can see that the situation of 20 countries has improved while those of 12 countries has declined. The improvement regards mainly new members (catch-up countries) whose indicators in 2003 were very low (take in Table IV). SII deteriorated in the most innovative countries: Denmark, the Netherlands, Finland, Sweden, the USA or Switzerland.

Table IV. European Innovation Scoreboard 2003-2007

Country	2003	2004	2005	2006	2007
EU27	0.45	0.45	0.45	0.45	0.45
BE	0.51	0.49	0.49	0.48	0.47
BG	0.20	0.21	0.20	0.22	0.23
CZ	0.32	0.33	0.33	0.34	0.36
DK	0.68	0.66	0.65	0.64	0.61
DE	0.59	0.59	0.59	0.59	0.59
EE	0.35	0.34	0.35	0.37	0.37
IE	0.50	0.49	0.50	0.49	0.49
EL	0.26	0.26	0.26	0.25	0.26
ES	0.32	0.31	0.32	0.32	0.31
FR	0.48	0.48	0.48	0.48	0.47
IT	0.32	0.33	0.33	0.33	0.33
CY	0.29	0.29	0.30	0.32	0.33
LV	0.16	0.16	0.17	0.18	0.19
LT	0.23	0.24	0.24	0.26	0.27
LU	0.50	0.50	0.53	0.57	0.53
HU	0.24	0.25	0.25	0.25	0.26
MT	0.27	0.27	0.28	0.29	0.29
NL	0.50	0.49	0.49	0.48	0.48
AT	0.47	0.46	0.48	0.48	0.48
PL	0.21	0.21	0.22	0.23	0.24
PT	0.21	0.24	0.23	0.25	0.25
RO	0.16	0.15	0.16	0.17	0.18
SI	0.32	0.34	0.34	0.36	0.35
SK	0.23	0.22	0.23	0.24	0.25
FI	0.69	0.68	0.65	0.67	0.64
SE	0.82	0.80	0.78	0.76	0.73
UK	0.57	0.57	0.56	0.55	0.57
HR	0.24	0.23	0.23	0.23	0.23
TR	0.09	0.09	0.08	0.08	0.09
IS	0.49	0.50	0.49	0.49	0.50
NO	0.40	0.39	0.38	0.37	0.36
CH	0.68	0.69	0.68	0.67	0.67
US	0.60	0.59	0.57	0.55	0.55
JP	0.60	0.61	0.61	0.60	0.60
IL	0.63	0.63	0.64	0.63	0.62
CA	0.48	0.48	0.45	0.44	0.44
AU	0.35	0.35	0.35	0.35	0.36

Source: European Innovation Scoreboard 2007. Comparative Analysis of Innovation Performance. Pro Inno Europe, 2008.

Financial contribution and innovation financing in the EU

The size of financial contribution for scientific research and development is considered to be an indicator of a country's engagement in the creation and use of new knowledge as well as an important element defining the country's innovation achievements. The new report of the European Commission (Key Figures 2007 on Science, Technology and Innovation, 2007) says that a low level of business R&D expenditures is still a serious threat to the European economy and

the achievement of the Lisbon goal. In the late 90s of the XX century there was a slow but continuous growth of R&D in the EU, around 2001 the situation became stable, and then fell to a reduced level of just 1,84% in 2005.

As a result, R&D in the EU27 is at a lower level than e.g. in the USA, Japan or North Korea. Moreover, new growing economies, such as China, are quickly catching up with the leaders. The ratio of R&D domestic expenditures to GDP helps us to assess how much a given country invests in innovation technologies. These expenditures are steadily decreasing in Poland and we are one of

the weakest of all OECD countries. In 2006 the EU (25 countries) allocated 1,9% GDP for R&D (R&D in the EU, 2005) whereas the USA 2,59% GDP, Japan 3,15% GDP and China 1,31% GDP. However, it is Sweden and Finland that are the world leaders.

We can distinguish three groups of countries in the EU with regards to their R&D expenditures. The first group consists of countries whose ratio is over 2,4% GDP (Sweden, Finland, Denmark, Germany and Austria). These countries have made considerable progress towards a knowledge-based economy. The second group consists of countries whose ratio is close to the EU's average, i.e. between 1,5 and 2,1% GDP (France, Belgium, the Netherlands, Great Britain, Luxemburg). The economies of these countries are changing but the pace of this phenomenon should be faster. The third, and the biggest group consists of countries, whose R&D expenditures are below 1,5% GDP (despite big differences): these countries must catch up and focus more on knowledge development.

There are significant differences in business R&D expenditures. In 2004 in the EU, only 55% of R&D expenditures came from the private sector, whereas 64% in the USA, 67% in China and

74% both in Japan and South Korea. Thanks to, among others, investments in R&D these latter countries are becoming a very attractive place for well developed companies to invest capital.

Currently, transnational organizations are the major players in the global R&D market. In 2002 they spent almost half of the 677 billion dollars which were allotted for R&D goals in the whole world and their share in global R&D expenditures of the sector of the economy exceeded 2/3. In 2006, the R&D expenditures of these enterprises around the world increased and were 10% higher than in 2005. In the EU this growth was 7,4% (5,3% in the previous year). The European Commission gathered data on the biggest R&D investors in the world: from a regional perspective – 1000 companies from the EU and 1000 from outside the EU (The EU industrial R&D investment Scoreboard, 2007). American companies are the world leaders, they take the first four places in the ranking: pharmaceutical Pfizer, which is number one, spent 5,8 billion Euro on R&D investments in 2006. German Daimler (although under the name DaimlerChrysler) spent 5,2 billion Euro. There are two more EU companies in the first ten: Siemens and GlaxoSmithKline (Table V).

Table V. Ranking of the top 10 companies by level of R&D investment in 2006

Rank	Company	Sector	Country	R&D Investments (mln euro)
1.	Pfizer	Pharmaceuticals	USA	5,8
2.	Ford Motor	Automobiles & parts	USA	5,5
3.	Johnson&Johnson	Pharmaceuticals	USA	5,4
4.	Microsoft	Software	USA	5,4
5.	DaimlerChrysler	Automobiles & parts	Germany	5,2
6.	Toyota Motor	Automobiles & parts	Japan	5,2
7.	GlaxoSmithKline	Pharmaceuticals	UK	5,1
8.	Siemens	Electronic equipment	Germany	5,0
9.	General Motors	Automobiles & parts	USA	5,0
10.	Samsung Electronics	Electronic equipment	South Korea	4,7

Source: The 2007 EU industrial R&D investment Scoreboard, European Commission, Luksemburg 2007

Analyzing the data comprehensively, one can notice that the research expenditure of the pharmaceutical companies increased in 2006 a lot. The fastest, e.g. Merck's expenditures rose by 24,3%, AstraZeneca's by 15,5%, Roche's by 15,5, Johnson&Johnson's by 12,9%. There has been an amazing growth of expenditures in the chemical sector too, especially among companies from the EU: Bayer (+30,3%), Solvay (+20,3%) i BASF (+19,8%). The space and air sector continues the growth of expenditure from previous years (+12,5%), and in particular two companies spent more: EADS by 21,2% ad Boeing by 47,7%. However, one can also notice a decrease of R&D expenditures in automobiles and parts sector, where the two main investors – Ford and DaimlerChrysler – reduced their expenditure considerably (by 10 and 7,3%). In contrast, Toyota Motor and Volkswagen increased their expenditure.

Interestingly, R&D expenditure of some big corporations (from the top ten investors) exceeds R&D budgets of many countries. In 2006 each of the above mentioned companies spent on this goal more than 5 billion Euros. As far as developing countries are concerned, only China, North Korea, Taiwan and Brasil spent more money on R&D. Analyzing the data from a regional perspective one can see that 40% of top R&D investors come from the USA, 32% from the EU, and 18% from Japan.

Conclusion

The present challenges with which the EU innovation policy must cope regard the general change in the presentation of innovations. The future directions of the development of the EU innovation policy should focus on, among others, promotion of innovation performance in public sector, growth of the regional dimension of the innovation policy or the development of clusters.

The biggest of all the new EU members, Poland is one of the weakest as far as research, innovation and competitiveness are concerned. Thus, there needs to be some positive changes in Poland in

the near future, i.e. the promotion of innovations, higher business R&D expenditures, more money for national research and new technologies, closer co-operation between the world of science and industry, development of diffusion of innovations.

The achieved results of innovation activity of all the EU's countries influence the economic and social development of a united Europe and contribute to the implementation, or the lack of implementation, of the Lisbon strategy goals and objectives.

Questions

1. Compare the innovation performance of the EU members in two periods: 2006 and 2007.
2. Discuss the innovation gap between the EU and both the USA and Japan.
3. Discuss the place of Poland on the innovation map of the world.
4. What solutions can you suggest so that Polish economy became more innovative?

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THE SYSTEM OF ENVIRONMENTAL MANAGEMENT OF RURAL AREAS IN POLAND

LIDIA KŁOS
UNIVERSITY OF SZCZECIN

Abstract

Agricultural activity, just as agriculture itself, still occupies major role in the development of rural areas and has natural environment at its disposal on a regional scale. Hence, agriculture bears great responsibility for the quality of the environment in rural areas. There are currently two challenges to be met by agriculture. First of all, it should provide enough healthy and safe food, and secondly, do it in such a way so that the environment is not harmed and its natural resources are preserved. That is why organic farming is considered as the most effective and protective environmental system in farming economy.

It is beyond any doubt that the development of organic farming is an element of this system.

Organic farming is the main element of sustainable development. It satisfies the needs expressed by farmers, nature and society. It provides healthy food and at the same time does not lead to the degradation of the environment. Finally, it provides fertile soil and enables one to preserve natural resources.

Organic farming is the most optimum system of managing and, together with other branches of economy, should be treated as a key element of socio-economic development of a region. Hence, organic farming is at present at the center of attention of many disciplines not only natural sciences or economics but also technical and social sciences. Furthermore, the development of ecological farming is equated with widely adopted system of environmental management referred to as sustainable development of rural areas.

The present article is aimed at introducing the process of organic farming development that takes place in Poland. Organic farming acquired profound importance once Poland had joined the European

Union. At the turn of 2003 and 2006, organic arable area in Poland increased over threefold and the number of farms increased from 2 286 in 2003 to 9 469 in 2006. It is Zachodniopomorskie voivodship that has favourable conditions and natural potential for the development of this form of agricultural production. Compared to other voivodships, Zachodniopomorskie voivodship is placed relatively high taken both the number of organic farms as well as their size into account.

Keywords: sustainable development of rural areas, organic agriculture, sustainable agriculture, organic farming, agri-environmental programmers, Poland

The development of organic agriculture in Poland

Organic agriculture had a minor importance in Poland until recently. First certificates of organic production were issued in 1,900 (certificates of organic production of 27 farms). However, the number of organic farms and organic farming areas have increased lately in Poland just as in other EU Member States.

Act on Organic Agriculture and the directive to this Act issued on March 16 was the first one to regulate legal articles on organic agriculture in Poland (Law gazette, 2003). The Act specified agricultural production conditions, conditions in which farm and food articles are processed, system for control and certification of production and processing, as well as system for disposing these products. Once Poland had entered the EU, it was necessary to adjust Polish law to the Community requirements. Organic Farming Act issued on April 20, 2004 met this requirement. According to this Act, organizational and control responsibility lies with three bodies, namely Minister of Agriculture, the

Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs, and units that make inspections and are authorized to award and withdraw certificates (Law gazette, 2004).

Once Poland has become EU Member States, Polish farmers, who use organic methods of production, have a possibility to make use of subsidies as a part of the National Agri-Environmental Programme (Agricultural Property Agency, 2006). This programme includes seven agricultural-environmental packages, which aim at supporting farming oriented to environmental protection, conserving important habitats, and conserving genetic resources of farm animals, namely

- sustainable agriculture (which consists in the reduction in fertilizing, balancing the farm with fertilizers, and obeying crop rotation),
- organic agriculture,
- keeping extensive meadows, which is connected with restoring or continuing mowing the meadows (mowed once a year) up till July 1 (marsh meadows, that contribute to water retention, are one of such meadows),
- keeping extensive grazing lands, which is connected with restoring or keeping extensive pasturage on semi-natural grazing lands in a way that guarantees maintaining floristic assets and habitats of endangered species,
- soil and water protection (which consists in using intercrops to increase the share of soils covered with plants in autumn and winter),
- so-called buffer zones (which consists in creating new two-meter or five-meter "protective strips of land" between arable land and body of surface freshwater, or land used agriculturally to a great extent, in order to reduce their negative influence and protect fragile habitats),
- protection of native breeds of farm animals (consists in keeping cattle breeds, horse

breeds, and sheep breeds endangered) (Agricultural Property Agency, 2006).

Farmers, who received certificates for conformity of production with organic production standards, as well as the ones whose farms are in conversion, may receive financial support. The amount of subsidies for organic production depends on the type of crops. Four groups have been distinguished, i.e. arable crops, grassland, vegetable crops, and special crops, i.e. orchards and berries. Table I shows payments for particular type of crops.

Accepting the package for five years, farmer makes an application based on plan devised, and receives agricultural-environmental payment for the time during which production is being converted into organic one (two years). Farmer receives subsidies during another three years, once his/her farm has received organic farming certificate.

Furthermore, since first May, 2004 farmers who have been using organic methods of production, may rely on financial support (as a part of organic agriculture development support) in the form of subsidies for control cost. These subsidies are paid from the state budget by Chemical-Agricultural Stations in accordance with the directive issued by the Ministry of Agriculture and Rural Development on April 15, 2004 (Law gazette, 2005). Moreover, subsidies for organic farming makes it possible to protect jobs in agriculture.

As results from data collected in 2004 by the Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs with reference to Poland, 3760 organic farms and farms in conversion (i.e. 63% more than in 2003) and 55 food-processing plants (150% more than in 2003) were registered. Taking the total number of the aforementioned farms (3,760) into consideration, 1,683 farms (46,817,2 ha in area) received certificates (24% more than in 2003). Furthermore, 1,639 farms were in the first year of conversion into organic production, whereas 438 were in the second year of conversion, which is shown in Table II.

Table I. The amount of subsidies for particular crops as provided in organic agriculture package

Code	Package name	Payment (Polish Zloty/ha)
S02	Organic agriculture	
S02a01	Arable crops (non-certified)	680*
S02a02	Arable crops (certified)	600
S02b01	Grassland (non-certified)	330*
S02b02	Grassland (certified)	260
S02c01	Vegetable crops (non-certified)	980*
S02c02	Vegetable crops (certified)	940
S02d01	Special crops – orchards and berries (non-certified)	1 800*
S02d02	Special crops – orchards and berries (certified)	1 540

*Subsidies are higher for farms in conversion because of production losses they suffer in this period.

Source: Production, costs, and direct excess of chosen agricultural products in 2005 In: Skarzyńska, A. (ed.) (2006). Ekonomiczne i społeczne uwarunkowania rozwoju Polskiej gospodarki żywnościowej po wstąpieniu Polski do UE. Warszawa

Table II. The number of certified organic farms and farms in conversion as well as the total acreage of farms

Detailed list	Altogether		Certified farms		Farms in the second year of conversion		Farms in the first year of conversion	
	number	acreage (ha)	number	acreage (ha)	number	acreage (ha)	number	acreage (ha)
2002								
Poland	1977	53 515.4	882	24 412.5	505	13 522.2	590	15 580.7
West Pomerania province	69	8 276.3	16	1 839.4	19	2 746.7	34	3 690.2
2003								
Poland	2286	61 236.1	1 287	35 554.3	496	14 888.3	503	10 793.5
West Pomerania province	85	9 489.2	39	6 032.4	28	2 309.0	18	1 147.8
2004								
Poland	3760	104 932	1 683	46 817.2	438	10 248.3	1 639	47 866.7
West Pomerania province	176	9 227.2	70	7 015.3	25	1 081.9	81	7 444.0

Source: own compilation based on: Agriculture and rural areas in West Pomerania province..., p 70

The collation showed that the total area of certified farms and farms in conversion (from traditional production into organic one) rose by 58.3% compared to 2003 and amounted to 104,932 ha. The area of arable land increased to 82,730,2 ha (i.e. by 60.3%), which constituted 0.5% of the entire arable land in the country. By contrast, in 2005 this area was two times larger (167,740 ha) and constituted 1% of the entire arable land in Poland. As for West Pomerania province, the number of new producers registered, who undertook activity in the scope of organic agriculture, amounted to 195 (farms) in 2005. Moreover, 27 producers started activity in the scope of organic processing (the number refers to the entire country), seven of who functioned in West Pomerania province.

According to data collected by Central Statistical Office, at the end of 2005 there were 7,182 organic farms (which implies that there was a 91% increase in comparison with the previous year), 2050 of which received certificates. On the contrary, in 2006 there was a moderate increase (31%) compared to the previous year, so the number of farms grew to 9,469. The greatest increase was observed in Lubuskie province and Wielkopolska province (as many as 187%), while the smallest one was recorded in Małopolska province (38%). With respect to West Pomerania province, the number of farms increased by 130% compared to 2004.

Comparing data from the years 2004-2005 with data from the years 2005-2006 in Poland, there was a threefold decrease in the dynamics of the number of agriculture producers using organic methods of production. By contrast, analyzing data on the number of food-processing plants in which products of organic agriculture are processed, this number increased more dynamically from 55 to 99 so by 63%, whereas in the years 2005-2006, this number grew from 90 to 163 so by 81%. With reference to West Pomerania province, the number of food-processing plants increased by 43%.

The total number of organic farms registered in West Pomerania province amounts to 948 (the greater increase observed in the years 2005-2006). Another fifteen farms specializing in arable farming are located outside the province, but have their registered offices in the province. There are 182 farms that specialize in organic mixed production, i.e. crop and animal production, while 712 farms specialize only in organic crop production. Table IV

shows a precise number of organic farms in West Pomerania province according to counties.

As it turns out from data collected by the Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs, organic farms small in area are in the vast majority in Poland. The smallest ones are found in Świętokrzyskie province (average area 10.7 ha), Silesia province (12.0 ha), and Małopolska province (14.7 ha). On the contrary, the largest ones are located in West Pomerania province (88.3 ha) and Warmia-Mazuria province (54.4 ha). In 2005, average organic farm was 24.85 ha in area.

Meadows and organic grazing lands had the greatest share in the structure of arable land (47% of the total of arable land area). Organic farms represented 40.3% of the total area of organic arable land, and 69.2% of the total of arable land in the country (Table V).

These farms were located mainly in West Pomerania province, Warmia-Mazuria province, and Świętokrzyskie province.

Taking animal production into account, a breeding of dairy cattle, young cattle for meat production, and pigs was prevailing. Breeding young cattle for meat production and beef cattle production was found mainly in West Pomerania province, Małopolskie province, and Warmia-Mazuria province.

In order to make a comparison, it is worth presenting numerical data for organic farms in the European Union. According to data collected by Institute for Organic Agriculture, there were 142,803 organic farms in the EU in 2004, which constituted 1.5% of the total number of farms in the Member States. Arable land on these farms was 5,730,534 ha in area (i.e. 3.46% of the total EU arable land area).

Taking EU 15 into consideration, the greatest number of organic farms was found in Italy (400,965), Austria (19 826), Spain (17,688), and Germany (16,603). In many Member States, the share of organic farms in the total of farms was greater than in Poland, e.g. this share was 11.3% in Austria, 6.6% in Finland, and 5.5% in Denmark. With respect to the share of organic arable land area in the total of arable land area, it can be noticed that Austria occupied the first position (13.5%), Finland was second (7.3%), and Italy was third (6.2%).

Table III. Increase in the number of organic farms (agricultural producers and organic food-processing plants) in particular provinces in the years 2004-2006

Province	Total of agricultural producers			Increase in the number of agricultural products 2005/2004 [%]	Increase in the number of agricultural products 2006/2005 [%]	The number of food-processing plants		Increase in the number of food-processing plants 2006/2005 [%]
	in 2004	in 2005	in 2006			in 2005	in 2006	
Lower Silesia	197	393	482	99%	23%	6	11	98%
West Pomerania	89	143	174	60%	22%	7	10	43%
Lublin	393	773	1063	96%	38%	15	21	40%
Lubuskie	66	190	266	189%	40%	0	4	40%
Łódź	71	174	213	145%	22%	3	3	0%
Łódź Voivodeship	697	1191	1354	71%	14%	7	12	71%
Łazania	434	849	997	96%	17%	14	26	86%
Łódź Voivodeship	26	36	45	38%	25%	1	1	0%
Łódź Voivodeship	430	852	1200	95%	41%	5	11	120%
Łódź Voivodeship	207	482	632	132%	31%	5	7	40%
Łódź Voivodeship	66	181	223	174%	23%	1	5	500%
Łódź Voivodeship	47	93	115	97%	24%	6	13	117%
Łódź Voivodeship	547	787	894	43%	14%	3	7	133%
Łódź Voivodeship	244	432	600	77%	39%	2	4	200%
Łódź Voivodeship	70	201	263	187%	31%	8	18	125%
Łódź Voivodeship	176	405	948	130%	76%	7	10	43%
TOTAL	3760	7182	9469	91%	31%	90	163	81%

Source: Agriculture and rural areas in West Pomerania province 2004-2006 – state and perspectives, published by ZODR Barzkowice 2007, p.92

Table IV. Organic farms (number and surface area) in West Pomerania province according to counties

County / region	Number of applications made by producers running farms in West Pomerania province	Total surface area of farms [ha]
Białogard	26	2 575.79
Drawsko	155	8 863.67
Kołobrzeg	34	2 852.32
Koszalin	76	3 777.29
Sławno	22	1 402.35
Szczecinek	98	12 546.14
Świdwin	103	6 442.02
Wałcz	59	2 880.83
Choszczno	47	1 358.86
Goleniów	67	5 289.00
Gryfice	20	4 934.80
Gryfino	22	927.92
Kamień	17	1 666.04
Łobez	19	1 823.48
Mysłibórz	22	956.84
Police	16	994.50
Pyrzyce	16	3 383.14
Stargard	27	2 474.84
Szczecin (borough)	72	8 861.05
Koszalin (borough)	26	2 344.81
Świnoujście (borough)	3	186.08
Other provinces	1	75.57
TOTAL	948	76 617.14

Source: Agriculture and rural areas in West Pomerania province 2004-2006 – state and perspectives, published by ZODR Barzkowice 2007, p.93

Table V. Chosen information about land use on organic farms

Detailed list	Total of organic farms		Altogether in Poland	
	(ha)*	(%)+	(ha)	(%)+
Farmland area	82 730.1	100.0	16 327 000	100.0
Including: meadows and grazing lands	38 860.7	47.0	3 365 000	20.6
orchard and berry crops	3 203.6	3.9	277 000	1.7
Arable crops	33 357.7	40.3	11 285 000	69.1
vegetable crops	829.8	1.0	208 000	1.3

*Data collected by the Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs, and Central Statistical Office

Source: own compilation based on data collected by the Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs, and Central Statistical Office.

Table VI. The share of organic farms area in chosen EU countries and regions

Country or region	Ratio of organic farms area to the total EU area (%)
Europe (25)	3.4
Germany	4.3
Sweden	6.8
Brandenburg, Meklemburg–Fore Pomerania (F)	8.7
Poland	0.3
West Pomerania province	0.8

Source: the Main Inspectorate of Market Quality of Agriculture Products and Foodstuffs

Once Poland had entered the EU (on May 1, 2004), it was outdistanced by other new Member States (as far as the share of organic arable land in the total of arable land is concerned). Leading positions were occupied by the following countries: the Czech Republic (organic arable land constituted 6.2 % of the total of arable land), Estonia (5.2%), and Slovenia (4.6%).

Nowadays, the entire world pays special attention to organic agriculture. Australia occupies leading position in developing organic farming (land used in organic way is 12.2 million ha in area). A great development is also observed in South America (6.4 million ha) and Europe (6.5 million ha). As far as Asia (4.1 million ha) is concerned, China occupies the leading position. Only North America resists world tendency as organic farms are only 1.4 million ha in area there.

Conclusion

Environmental protection is in society's interest, and the influence of arable farming on the quality of the environment cannot be greater than necessary.

Organic farming and the share farmers have in organic agriculture package is the best form of the protection of the natural environment as far as agriculture is concerned.

The article was supposed to introduce issues relating to organic agriculture development, which increased in importance once Poland had entered the European Union. This state of affairs results from awarding bonuses for participation in agri-environmental programmes, and also greater environmental awareness that agricultural

producers and people dealing with agricultural products processing have.

The area of organic farms increased three times in the years 2003–2006, just as the number of farms themselves (from 2,286 in 2003 to 9,469 in 2006).

However, this result is still unsatisfactory on a global scale as organic arable land constitutes only 1% of the total area of arable land in Poland, and organic farms represent only 0.26% of the total number of all farms. Taking the number and area of organic farms into account, West Pomerania province occupies quite a high position compared to the entire country (there are 948 such farms in the aforementioned province, which implies that there has been a 130% increase in comparison with 2004). Furthermore, farms large in area (on average, c.a. 80ha) are prevailing in West Pomerania province.

Comprehension check:

1. Explain the essence of sustainable development.
2. Characterize the notion of organic farming.
3. Present the elements of environmental management system in agriculture.
4. Present the forms of support for agriculture (including organic farming) offered in Poland.

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