Creative industry manager

Technical knowledge Non-technical skills

Edited by
Olimpia Kunert

Monographs 2012
Lodz University of Technology

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Contents

Introduction

In the strategic assumptions, European Union took the direction of increasing distance in relation to developing countries for more innovative products through knowledge-based society. The determinant of the knowledge-based society is an increase in the level of innovations that are implemented effectively. In the EU modern industrial model, maximal integration of technological and production processes on the whole continent scale is supported so that the competitive advantages of the Member States become a source of opportunities for all countries. Thus not only necessary increase in the competitiveness of countries but the competitiveness of the whole economies depends on the innovative competencies of the companies.

Taking into account the fact that the rules of the free market are not sufficient to achieve the long-term goals, national governments can use variety of instruments to stimulate development of the innovation of the economy. The influence can be direct or indirect. The following belong to the direct activities: government procurement and support for research and development, which in the past provided examples of significant technical transformations, new implementations and production experiences, especially visible in the electronics and aircraft industry. The second example of direct activities are changes in legislation. Regulatory system is a kind of a system of pressure which leads industry more to upgrade its existing technical solutions than to take a risk to experiment with the revolutionary innovations.

There is a second group of factors on which the government has only an indirect influence. The following belong to these factors: availability of venture capital, availability of mobile skilled employees, competitive conditions in the industry and others.

Comparing the support of the United States and German governments in the process of building a knowledge-based economy, significant differences can be seen. German priorities are based on the market rules of competitiveness and stimulated cooperation between industry, government and research institutions. The government gets involved directly only when level of innovation determines market success. German innovation policy is geared towards the use of instruments of direct actions such as: creating a climate of innovation, reducing research and development costs, encouraging big corporations to cooperate in innovative investments. The government and the federal States substantially financially support extensive network of research organizations with the main emphasis on the researches having application in the industry. Industrial innovations of “big science and technology” are supported by the government in a way of high priority in government expenditures, especially on the stage of implementation of innovations. Program „first innovation” deserves special

attention, in which government incur 50% of costs of commercial application of promising new solutions and provides bank guarantees for bank syndicates in order to facilitate the access to venture capital.

U.S government programs are much more varied, however in the majority of them social objectives are visible, such as: support for small businesses, creation of new jobs, increase in availability of consumption goods, protection of the society from the harmful effects of technology, but not influence on the level of innovation. Ordering of priorities in government programs indicates that science and technology policy is shaped to support the supply of innovations and consumer demand on innovative products. U.S government programs direct the flow of aid towards the development of foundations of science crucial for the development of new technology, shape the policy of influence on industry structures, economic policy of innovation development and also government policy influencing international trade. Equivalence of the objectives of innovative policy (social as well as development goals) is seen, especially in major branches of the American industry: aircraft and aircraft engines, automotive, steel, semiconductors and synthetic materials. Characteristic for the U.S government programs is broad impact on mutual relations between various branches of industry. Both the defense industry and government research institutions support various branches of industry, particularly important for the economy. To make the support possible, Congress prepares various analyses of the needs and opportunities of the American industry, legislation and tax policy as well as foreign investments.

Innovation is based on the knowledge of the launched innovation and numerous non-technical skills, which can lead to a success, that means to generate mass demand on innovative products. Leading companies have a benchmark for effectiveness of new solutions. Innovation should ensure higher profitability of the company within the period not longer than five years. The fulfillment of the criterion requires from average company specified relations between output ideas, idea and successful products. Such calculations are already common in the United States but in Europe are rare. In the United States all reputable universities have controlled the knowledge in this field for a long time. In Europe, only in two German universities exams on innovation can be found and according to researches, in Germany only 17% of mid-level managers and 7% of members of the board took part in training in the field of implementing innovations.

In the world literature, more and more attention is paid to the value of knowledge, therefore the value which is gathered by a company directly from its employees. The employees cause that one company is successful, while others, comparable in material matters, fall. In the coming years the managers who are creative leaders and create the conditions for creativity and innovation of the employees will be the most valued.

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THE METHOD OF MACHINERY AND DEVICE ASSESSMENT BASED ON MAZTE-M UTILIZATION

Abstract

Interdisciplinary relations of the issues concerning machinery and device utilization have gained significant importance in technical diagnostics in the aspect of their applications. Technical diagnostics as a discipline of the methods and techniques to examine the technical condition of structures, refers to the assessment of the reliability through monitoring functional performance of production and assisting processes and the features of the end product. The MAZTe-M method enables assessment of the value of the fixed assets within the area of machinery and devices on the basis of the technical environment of their operations (according to their technical condition, reliability, the amount of work performed and order priority) in two aspects: their wear in the specific working place in a company as well as economic profitability of utilization. The MAZTe-M method analyses the utilization of machinery and devices in a particular technical environment. In order to estimate the average value of a machine,one applies functions describing coefficient values against the passing of time. In the case ofeconomic wear of machinery and devices, calculating complementary synergy coefficientis calculated taking into account the process of machinery and devices liquidationunder the owner's supervision.

PN-82/N 04001 norm defines **utilization** as a set of purposeful organizational, technical and economic activities implemented by people in reference to technical objects and the dependencies between subjects and objects from their acceptance to perform the assigned task till their liquidation. Such a definition treats utilization as a technical and economic entity along with the item's production, the sale of an item or a system and is finalized with their withdrawal.

Interdisciplinary relations of the issues concerning machinery and device utilization have gained a significant importance in technical diagnostics in the

aspect of their applications. The science of utilization currently consists of a number of individual scientific trends which have formed the foundations of its dynamic development. They include: machine security, technical diagnostics, exploitation systems, reliability and tribology.

Technical diagnostics as a discipline of the methods and techniques to examine the technical conditions of structures, refers to the assessment of reliability through monitoring functional performance of production and assisting processes and the reliability of the end product. The application of the MAZTe-M method remains one of the forms of raising qualifications and competences as technical and economic skills at the operational level thus the managerial competencies of the first degree.

The classical view presents the tasks of technical diagnostics in the following way:

- to examine and describe symptoms of faults (in all phases; early, advanced and impending danger),
- to work out examination methods,
- to work out protection precautions.

As the utilization of a machinery progresses its exploitation potential runs out as a result of:

– technical wear and tear (mechanical),
– moral depreciation (economic).

The assessment of amachine's wear is based on the utilization assessment though categorizedinformation on the evaluated machine. Due to this fact, the utilization assessment of an item should take into consideration the technical context (the utilization of the exploitation potential, the effects of utilization and implementation expenditure) and the economic climate (the utilization of potential, gained effects and expenditure accepted – by the owner, buyer, middleman)[1].

The exploitation assessment of a machine comprises activities whose aims are:

– verification estimation – refers to the utilization of a machine from the start to the set date of its assessment; it avails of the factual data, the precision can be enhanced by the usage of data on such items according to their type, age, and conditions of utilization,
– anticipatory estimation – refers to the machine from the received estimation date till the end of its operation, it utilizes hypothetical, estimation computational data; the precision can be enhanced by the usage of simulation and prognostics data of machine utilization.

[1] J. Napiórkowski, A. Muzalewski, *Metodyka wyceny używanego sprzętu rolniczego refundowanego w ramach Sektorowego Programu Operacyjnego „Restrukturyzacja i modernizacja sektora żywnościowego oraz rozwój obszarów wiejskich 2004-2006*", Warsaw, 2006.

The quantitative assessment is a transformation of information and views about the item and its operation into an expertise on its technical condition. The essential assessment aims at:

- awareness of technical and utilization features,
- the assessment of device functionality,
- finding a reference pattern – a collection of assessment criteria.

In order for the machine to work properly it is necessary to categorize the features describing a machine according to their importance:

Critical features – a group of features when the value exceeds the acceptable level of tolerance range leads to a decrease of its effectiveness and may cause its destruction or put a person or his/her environment at risk.

Essential features – the features whose value, when exceeded, leads to decreasing machine operation and effectiveness and poses a danger of its destruction.

Features of less importance – the features whose value, when exceeding the set range, cause acceptable lower efficiency.

Ignorable features – the features whose changes bear no impact on the effectiveness.

By *technical wear* one understands permanent and undesired physical and chemical changes which occur during operation, as a result of which the operation period to perform required functions becomes gradually exhausted. As a consequence, one can observe changes of properties and shape of material from which the elements of the machine are constructed. Such a fact stems mainly from strain, stress or chemical reactions occurring in the material of a given element as well as between the material and its environment.

Reversible wear – refers to those elements or machines which, through repair or modernization, may return to the nominal usage parameters or for which it is possible to adjust their function to the current technical condition.

Irreversible wear – refers to those elements or machines of which the process of functional changes has made the repair or modernization unprofitable or impossible.

Natural aging – is a gradual process of reducing nominal functional parameters triggered by the physio-chemical phenomena.

Premature aging – refers to a too speedy loss (when compared to natural aging) of functionality of machines caused by improper utilization or technological faults.

MAZTe-M enables us to put an estimate on the assets within the area of machinery and devices based on the analysis of their functional environment according to the set operational strategy (according to their technical condition, reliability, work performed, order priority). The analysis of the value of machines and devices is conducted on two levels:

1. **technical wear in the local working environment,**
2. **economic aspect according to the profitability.**

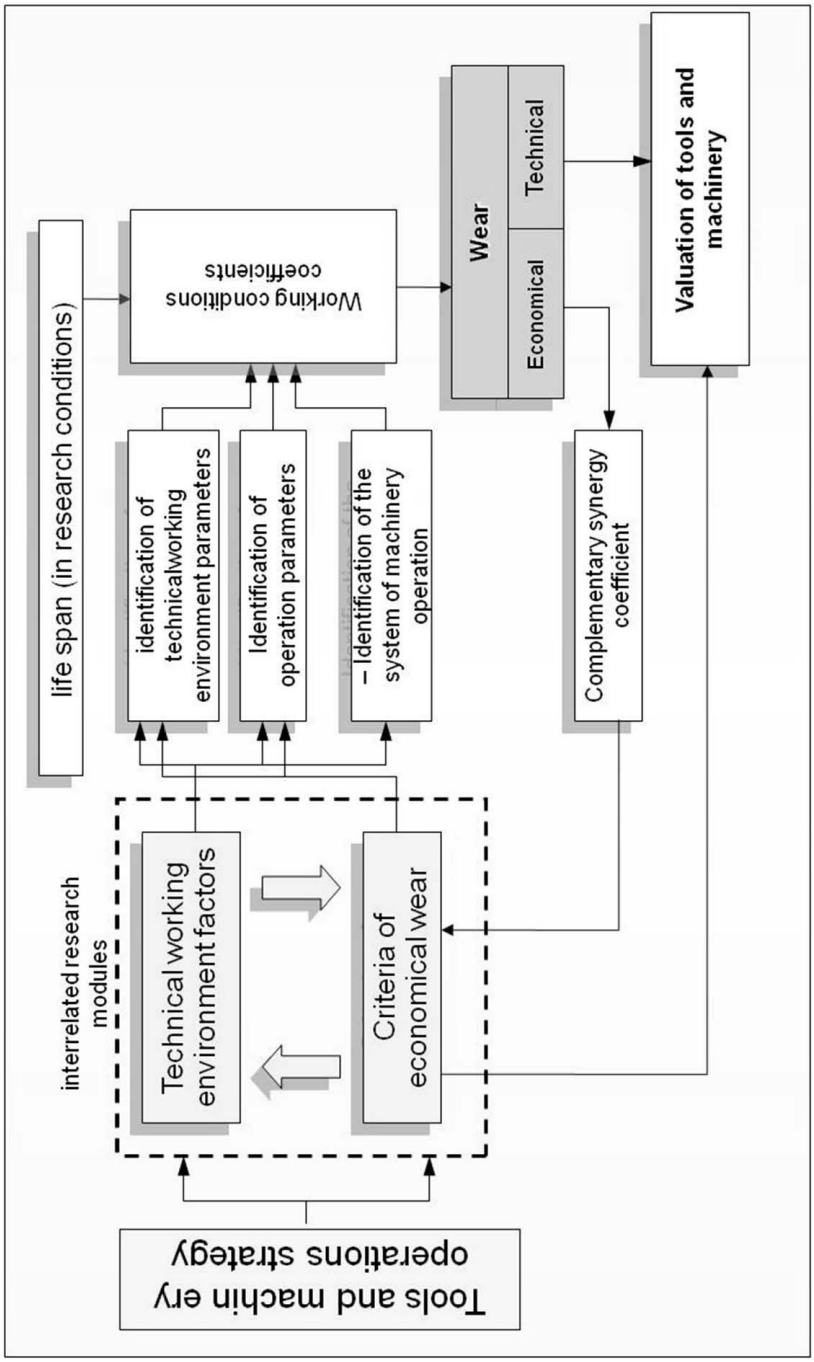

Fig. 1. Research model of assessment the value of machinery and equipment based on MAZTe-M method
Source: own research.

The criteria of the economic aspect refer to:

- high power-consumption;
- change of production technologies;
- obsolete design solutions;
- higher profitability of outsourcing;
- non-compliance with environmental policy;
- the starting data for the certificate of technical wear comes from an audit conducted by an expert on technical working environment such as air temperature, humidity, dust, exposure to atmospheric conditions, machine and device overloading;
- in this case, the problem of machinery and device operation is perceived by the owners and the business environment not from the point of view of the operational problems but the results of the operations in particular conditions. This comprises of two kinds of information: whichallows users to decide which systems to best apply and for owners to learn about the lifespan of machines and devices in particular conditions;
- the above environmental factors impact significantly onthe course of the wear of machines and devices in individual companies. MAZTe-M considers particular operational conditions through the application of corrective ratio in reference to calculated wear values of the algorithm 1. The coefficient values are expressed on the scale 0.9-1.0.

The course of the research process also establishes the life span of a specific machine or equipment exposed to harmful factors. If this period is shorter than the total period, its impact will be relative only to the period of environmental degradation.

The value of machinery and equipment (Wf) is calculated according to the following algorithm:

$$W_f = W_o * y \tag{1}$$

where: W_o – replacement value,

y – product of life span coefficient *a* and the complementary synergy coefficient *b*.

$$a = \frac{l_e}{l_c} \tag{2}$$

where: l_e – expected period of utility,

l_c – actual lifespan.

Taking into account of the number of years the machinery has been in operation and the time horizon of its technical wear, one can calculate the longevity coefficient. This coefficient is defined as a ratio of expected period of utility to the actual lifespan of the machine. The calculated coefficient is then used to bring the initial value into compliance with the output market value of the machine.

MAZTe-M method is used to analyze the technical wear process of machinery and equipment in a specific working environment. Five coefficients have been set out to correct the value of machinery and equipment in relation to the impact of degradation in the technical working environment. Table 1 summarizes the *ideal values*of the correcting coefficients, which are applied to estimate the value of machinery and equipment on the basis of operating conditions. The ranges of coefficient values were determined by research in the process of specific valuations.

Table 1. The ranges of coefficient values according to the MAZTe-M method

Researched machine types	Temperature	Humidity	Dust rate	Impact of weather conditions	Workload while in operation
	Coeff. α	Coeff. β	Coeff. γ	Coeff. δ	Coeff. ε
Steam and heating boilers	0,98÷1,00	0,96÷1,00	0,98÷1,00	0,99÷1,00	0,90÷0,98
Metal moulders	0,93÷1,00	0,92÷1,00	0,96÷1,00	0,95÷1,00	0,91÷0,99
Machine tools for plastic moulding	0,94÷1,00	0,95÷1,00	0,97÷1,00	0,97÷1,00	0,93÷0,99
Machines for general use in agriculture and food industry	0,90÷0,99	0,90÷0,99	0,99÷1,00	0,98÷1,00	0,95÷0,99
Machines and equipment for clinching and compressing liquids and gases	0,91÷0,98	0,90÷0,99	0,96÷1,00	0,90÷1,00	0,90÷0,98
Industrial furnaces	0,90÷0,97	0,98÷1,00	0,96÷1,00	0,92÷1,00	0,90÷0,97
Heat Exchange machinery	0,94÷1,00	0,94÷1,00	0,98÷1,00	0,93÷1,00	0,91÷0,99
Other machinery and tools for general use	0,92÷1,00	0,94÷1,00	0,93÷1,00	0,93÷1,00	0,91÷0,99
Specialised machinery for the food industry	0,95÷1,00	0,94÷1,00	0,99÷1,00	0,98÷1,00	0,94÷0,99
Cranes and conveyors	0,90÷1,00	0,90÷1,00	0,90÷1,00	0,90÷1,00	0,93÷1,00
Industrial machinery	0,92÷1,00	0,91÷1,00	0,93÷1,00	0,90÷1,00	0,91÷0,99
Means of transport	0,92÷1,00	0,93÷1,00	0,96÷1,00	0,93÷1,00	0,93÷0,99

Source: own research.

The essence of the MAZTe-M method is that the market value of the machine is calculated on the basis of its technical condition, which depends on its type, elapsed time of operation, as well as operating conditions. In a dynamic technical environment of the company and against the backdrop of a widespread progress of technology, this method is relevant for machinery and equipment, for which value change econometric models can be determined over the years of operation.

In the case of the valuation of the whole enterprise and its assets, we are dealing with a large number of machinery and equipment, classified in different groups of fixed assets, which differ from each other not only in terms of purpose, but also in durability and number of years in service. These include fixed assets In which the economical wear occurs after several years, and those in which technological progress is limited and, consequently, their economical wear is extended in time.

An average price of the machine is calculated on the basis of the determination of one of the characteristics relevant for a particular group of machines. MAZTe-M method allows for the creation of features characteristic for the machine group, which means that in case one wishes to establish the value of a lathe, one treats it as belonging to the group of metal moulders and in the said valuation one uses characteristic features of this group. To determine the average price of the machine, one uses a function describing changes of the technical coefficient of the machine's value over the years of operation. This coefficient is calculated using the following formula:

$$W_T = k_{T1} * e^{-k_{T2} * t} \tag{3}$$

where:

t – is the life span of an asset (in years),

K_{T2} – coefficient dependent on the chosen machine group. Studies have shown its value is in the range of 0.05 to 0.1. The value of 0.01 is assumed for such machinery and equipment, for which technological progress is almost imperceptible, and the economical wear of which progresses at an almost stable rate throughout their life spans. Value of 0.05 is assigned to such machinery and equipment, where technology is changing rapidly and, after a relatively short period of operation, the unit becomes obsolete, and its continued use is no longer cost-effective or possible (this is the case, for example, in computer technology, for which Moore's law is applicable, and where increasing need for better performing hardware and software makes it imperative to replace older IT equipment with newer units.

K_{T1} – this coefficient takes into account the fact that the same group of machines may contain units that are better equipped and more technologically advanced than others within the group. Less sophisticated devices, with no up to date technological solutions, depreciate faster than those in which the manufacturer

applied the latest available solutions. The values of the coefficient determined by way of research are in the range of 1÷1.1.

These graphs show the differences in the technical coefficient depending on the selection of coefficients KT1, T2.

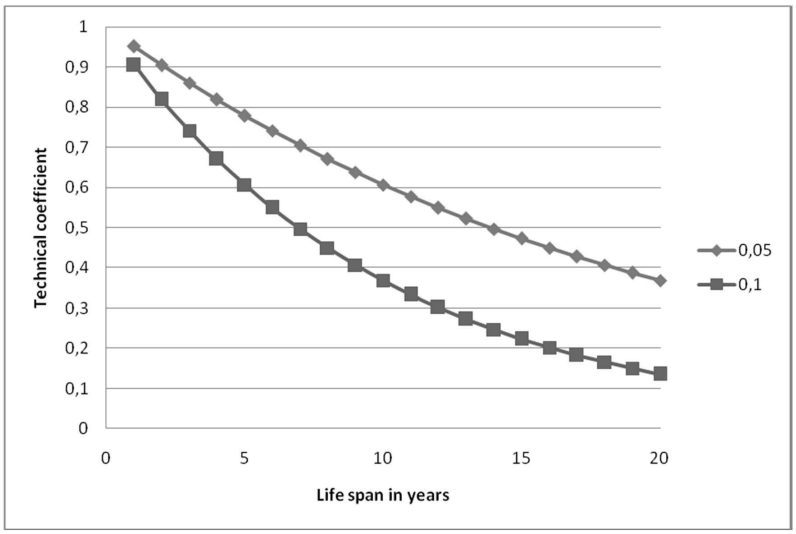

Fig. 2. Technical coefficient values for different values of KT2
Source: own research.

Fig. 3. Technical coefficient values for different values of KT1
Source: own research.

Current state of knowledge allows for widespread use of MAZTe-M method for the valuation of machinery not only commonly found on the market (where other valuation methods, such as statistical market analysis, can be used), but also specialist equipment, for which there is no available information on prices in the secondary market. This method takes into account not only the technical state of the machine, its running conditions and the course of its operation but also the degree of innovation of the solutions applied by the manufacturer.

The main trend in the development of this method is constant expansion of databases from the market. Although the method itself does not require the user to continuously analyzechanges in the market value of machines or to monitor the press, classifieds and exchanges, the data obtained from these sources, both domestic and European, serve to confirm the validity of the algorithm applied in the calculation of the market value or to verify the coefficients chosen in the course of research.

The importance of this method will increase significantly if depreciation functions are developed for all machine groups. This method is also crucial in terms of control because it allows for quick verification of the achieved market value levels. This method is also helpful whenever one needs to determine the value of machinery that is less commonplace on the market, but can still be treated as belonging to a machine group for which it is possible to define the functional dependence of depreciation. The basic problem in this method concernsthe determination of initial value of machines currently not in production.

Research on the subject also included an evaluation of the whole system of machinery operation within the enterprise. The diagram in Figure 4 illustrates the range of research in this area. Measured value of machinery and equipment depends on the organization of that system of operation, and in particular on the chain of actions, processes and phenomena associated with the operation of technical facilities. Main activities which impact an assessment of the technical condition of machinery and equipment are those related to its service and operating conditions.

Evaluation of the system of machinery operation is conducted using a 1-3 scale range. Rating of 1 means that the company conducts only recovery repairs, rating 2 means the technical inspectionsare being carried out in accordance with guidelines issued by the manufacturer, and a rating of 3 means that the system meets technical guidelines for machinery and equipment maintenance, and that the devices are serviced securely. If the system receives a rating of 1, a progressive approach is assumed in relation to technical wear, which means that as time passes, depreciation will take place faster.

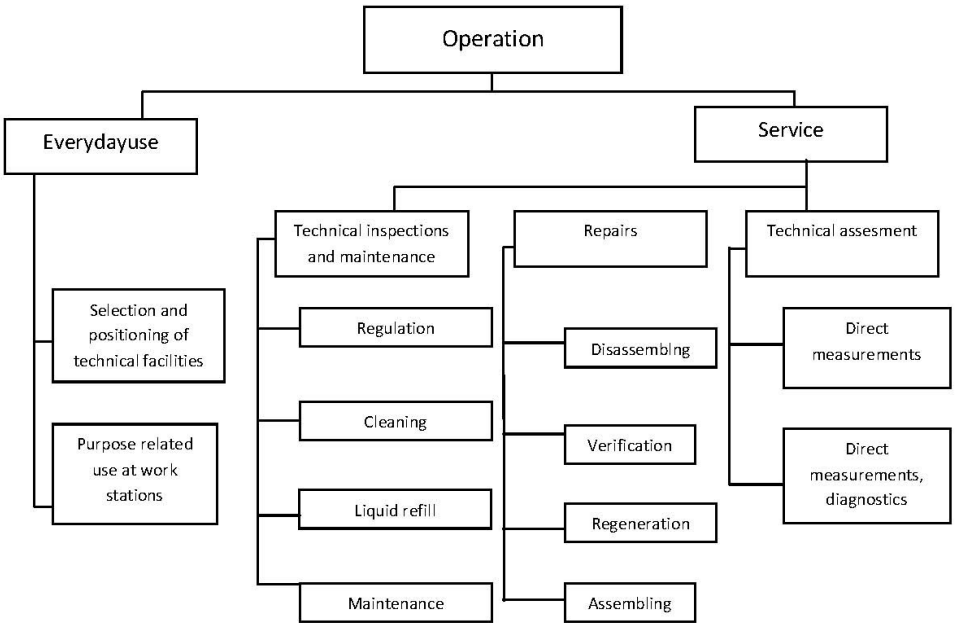

Fig. 4. Machinery operating system range of research chart
Source: ownresearch.

Photo 1. Devices operating in an environment heavily dusted with ore

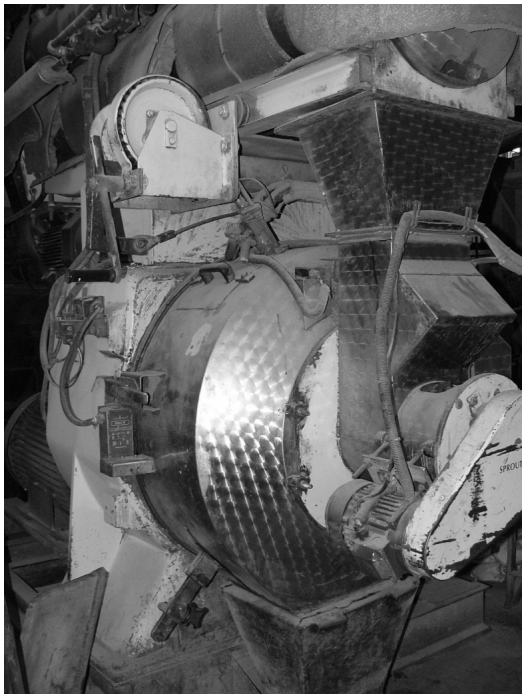

Photo 2. Devices operating in an environment dusted with particles of plant material

Photo 3. Devices operating in low temperatures

Photo 4. Devices operating in high temperatures and high air humidity

Photo 5. Devices operating at room temperature

Photo 6. Devices no longer in use, stored in closed rooms

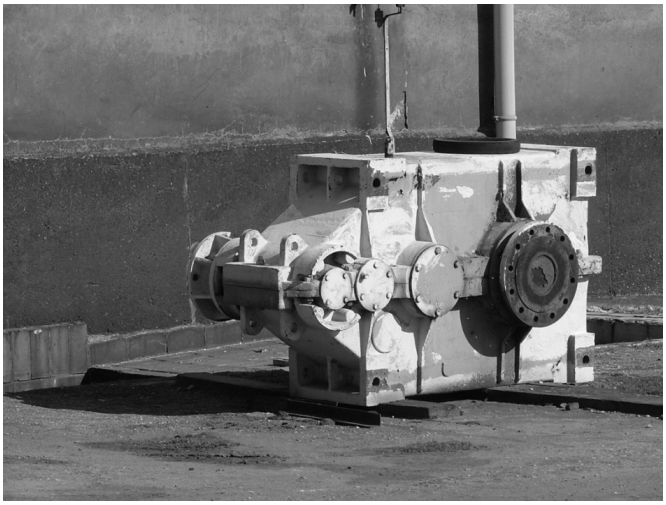

Photo 7. Devices no longer in use, stored in an open space

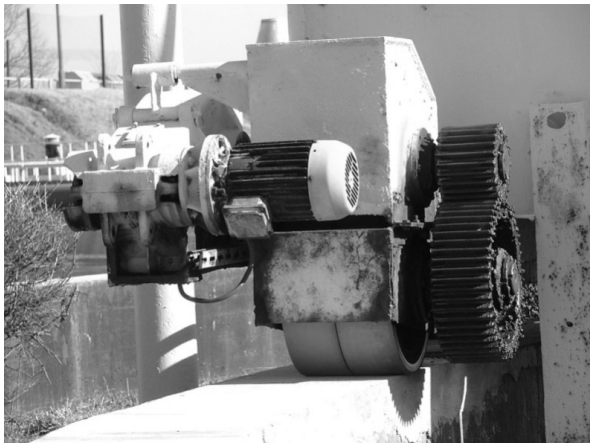

Photo 8. Devices currently in operation,
directly exposed to changing weather conditions

In the case of technical wear of machines and other devices, a so called complementary synergy coefficient is calculated, taking into account the process of scrapping machines and devices under the supervision of the owner. The synergy coeficient is calculated as follows:

1. **Factors which impact the depreciation of the machine:**

- Disassemblingcosts,
- Value loss after disassembling,
- Costs of technical preparation of machines intended for sale,
- Pre-sale costs (press advertising, costs related to bidding).

When calculating the complementary synergy coefficient, if the expected life span of the machine does not extend beyond the 3 year period, scrap price value is assumed for that machine.

When calculating disassembling costs, the degree of sophistication of the device need not be considered, as this factor is regulated by involving a larger number of employees in the process, as and when required. Concerning certain devices with pneumatic installations, it has to be remembered that their disassembling process is more complex, stretched in time, and, as such, more expensive.

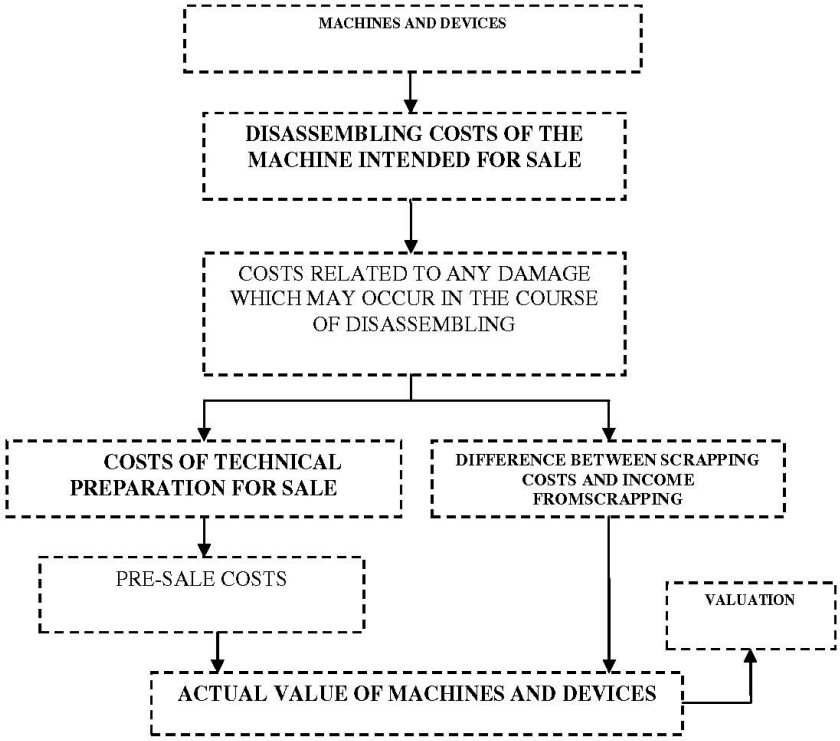

Fig. 5. Algorithm chart for calculating complementary synergy coefficient
Source: own research.

2. Calculation of the complementary synergy coefficient components

In the process of calculation of the components, one takes into account the total number of machines and devices under valuation and the total number, given in per cent, of devices treated as scrap.

3. Costs breakdown

3.1. Disassembling costs

Disassembling costs are calculated in relation to the time needed for disassembling, the number of people directly involved in the process and the cost of their remuneration.

3.2. Costs related to possible damage in the process of disassembling

Potential disassembling related damage has been estimated to stand, as loss of value, given in percentages, at approx. 8,5%.

3.3. Costs of technical preparation for sale.

The aboveinclude:

- Cleaning and maintenancecosts,
- Technical inspection,
- Determination of utilityvalue.

3.4. Pre-sale costs.

Theseinclude:

- Remuneration for salespersons (employees involved in the organisation of the bidding process),
- Cost of press advertisements, leaflets, folders etc.

The above costs have been estimated to stand at approx. 30%.

3.5. Costs and income from scrapping.

The difference between the value of scrapped machines and the income acquired through selling for the price of scrap is negligible. The income from selling at scrap price constitutes 92% of estimated value of the machine intended for scrapping.

Life span forecasts for machines operating in specific conditions give users information and feedback allowing solutions to be applied in machinery operation. Optimisation procedures in the system should lead to prolonged life spans of machinery through the alleviation of the impact of the technical environment in which these devices operate.

Conclusion

Praxis of economy presents us with new issues related to the building and operation of machines, stemming from the necessity to evaluate fixed assets, which include machines and devices in constant operation for commercial purposes, such as credit cover, insurance purposes or ownership supervision.

These aims fall well outside the scope of conventional technical diagnostics, because the possibility of technical inspection is excluded. The machines are continually in operation, therefore it is not possible to conduct technical diagnostic tests. The MAZTe-M method constitutes a significant methodological contribution to the field of diagnostic tests.

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INSTRUMENTS TO SUPPORT DECISION COMPETENCIES OF AN INVESTMENT PROJECT MANAGER

Abstract

From among many competencies of a manager, the abilities of team, project and organization management become especially important. However, to make right decisions, one needs to have appropriate tools supporting effective company management. In case of companies carrying out investment, modernization or innovative projects, it is especially important. Implementation of those projects takes place in various conditions resulting from changing and turbulent environment. Thus, if the manager does not have sufficient information support, provided in time and allowing for effective decision making, which mitigates negative effects of previous actions, he is basically doomed to failure. In such a case, what decides about the situation in the project execution process is a coincidence, not intentional actions of the staff, based on their knowledge about potential risks. Such a knowledge, gained early enough, allows for taking more effective corrective actions. This paper is an attempt to define an operational model of a company along with principles of monitoring actions of an enterprise that carries out projects and functions in the current economic situation, illustrated by an example of a construction company. Its implementation is supposed to provide the managing staff with stores of information that efficiently support the company management process.

1. Introduction

During last few years a number of projects co-financed from the resources of the European Union were carried out in Poland. Many of them were significant investments in the country's infrastructure and the development of innovative Polish economy. Those investments, aside from positive effects, showed many weaknesses in the functioning of domestic companies. Some of investment projects turned out to be the beginning of bankruptcy proceedings for companies

and sparked a wave of discussions concerning the causes of such a situation. The problem is complex. It was influenced by the current wording of the Public Procurement Act, high demand on commissions and strong competition on the market, forcing entities to start the partially destructing fight for getting a commission by means of dangerous and irrational lowering of tender prices. In addition, it revealed all organizational and competence flaws of the companies. The consequences of the latter are especially negative when an enterprise completely uses up its simple reserves. Execution of a contract of low profitability should force the companies to take actions improving the management efficiency, which, unfortunately, did not happen in every case.

In 2010-2011, the author had an opportunity to observe and study the situation of enterprises operating in the market conditions when there was a huge demand for commissions and companies had to compete for every contract, even at the cost of drastically lowering the tender price. Those observations were made from the point of view of not only the contractors and executors of orders, but also the ordering party, since the author had an opportunity of taking an active part in tender proceedings. The deliberations on the functioning of the public procurement law and the monitoring system of spending EU resources will not be discussed in this article. It is another topic, which requires detailed analyses and studies. In the author's opinion, the management system of EU resources for the modernization of Polish economy, implemented in the period 2007-2012, requires modification, which will allow to avoid negative effects that can be currently observed. It especially concerns projects connected to implementation of innovations, which, by their very nature, entail more risk. This paper is concentrated on organizational issues along with supporting competences of managers of construction companies, since the companies perform their tasks as typical projects. This study is based on the author's experiences as a consultant of construction companies, which carried out, inter alia, projects financed from the EU resources, as well as his participation as a lecturer in training courses improving competences of managers of construction companies.

2. The essence of the project management

There are many definitions of project management. In fact, every author of a publication creates his or her own definition. Nevertheless, the definitions that are most frequently quoted in specialist literature were formulated by leading management theorists, including J.A.F. Stoner, C. Wankel or R.W. Griffin. Griffin defined management as "knowing exactly what we want from people and then making sure that they do it in the best and the cheapest way"[1]. The terms

[1] R.W. Griffin, *Management*.

"management" and "directing" are used interchangeably in literature, although one can find opinions that management is a type of directing in a more narrow sense.

According to J. Penc, management is "directing activity based on specifying the goals and fulfilling them by means of using a given organization's resources, processes and information in the current external (legal, social, economical, etc.) conditions of its operation in an efficient and effective way, according to social rationality of economic actions."[2] Thus, enterprise management is a group of processes, along with their legal and institutional aspects, that aims to achieve the expected result. The definitions quoted also point out the complexity of management, which, in the classic understanding of the term, comprises: planning, organizing, stimulating and monitoring. In the context of reaching various goals of an enterprise, one has to consider the complexity of that enterprise's actions also from the point of view of their repeatability. M. Trocki[3] lists four different examples of types of actions undertaken in an enterprise, that are characterized by various levels of complexity and repeatability:

- routine actions, simple, repeatable, performed on the basis of practical and empirically tested patterns by the current organizational structure of the enterprise,
- improvized actions, also simple, but not repeatable, taken according to a given situation and performed on the basis of unrepeatable (improvized) patterns by the current organizational structure of the enterprise,
- functions, complex actions, repeatable, formalized, prepared on the basis of specialist knowledge, experiences, instructions, processes and procedures and performed by the current organizational structure or a new one, established to perform new functions,
- undertakings (projects), also complex and unrepeatable actions, preceded by thorough analysis of a given case and performed using complex and unrepeatable patterns of action by means of time-limited organizational solutions within the current structure or by separate units, also those which are not parts of the enterprise's structure.

Routine or improvized actions, according to M. Trocki[4], are the basis of the enterprise's operations. Complex actions require a special approach. Good support of the enterprise's organizational structures is necessary, since such actions make the functioning of the enterprise more complex and very often overlap with the enterprise's routine actions, making their performance

[2] J. Penc, *Strategie zarządzania. Perspektywiczne myślenie, systemowe działanie* part. 1, Agencja Wyd. Placet, Warsaw 1994.
[3] M. Trocki, *Zarządzanie projektami*, PWE, Warsaw 2003.
[4] Ibid.

more difficult. They are expensive, carried out in a specific period of time and involve risk.

Experience and practice indicate that increasingly more complex actions are performed in enterprises. It is a result of the necessity of a number of actions to be taken by enterprises in order to improve competitiveness of their market offer (in terms of prices, quality, assortment, etc.), such as innovative implementations, restructuring, implementing programmes improving the market situation of the company or modernizations.

It means that enterprises often have to concentrate on two courses of action:

- managing the current, repeatable production and routine actions that create the revenue base of the company,
- managing complex actions that require much engagement of the directing staff in their performance, the effects of which will be noticeable later.

There are also many definitions of complex actions, defined above as undertakings. Professor Kotarbiński described undertaking as "a complex multi-subject action performed according to a specific plan, which, due to its complexity, may be created by means of special methods."[5] The definition was created in times when there was little computer support of management of complex undertakings, but nowadays, over 40 years later, it is still valid and important. Currently, such complex undertakings are called projects and project management became the main subject of many publications during last few years.

Thus, a project is a complex, elaborate undertaking aimed to reach a certain goal. **The goal of the project** is one of its fundamental characteristics and can be defined as reaching the required result[6]. The result of the project is crucial to evaluate the effectiveness of its execution.

The second characteristic of a project is its uniqueness. The term "singularity" is also used. Projects are unique and, even if there is similarity between them (for example in the construction industry), conditions of their execution are different. Projects are set in different time and their costs and external surrounding are different as well, which, obviously, influences their effects. The similarity between projects is, however, helpful when planning a project's execution, since the gained experience can be used as the basis to support a new undertaking.

The complexity of projects was mentioned above. According to the quoted definition, project plans can be multi-subject and comprehensive. Usually many organizational units and employees of an enterprise take part in a project. For

[5] T. Kotarbiński, *Sprawność i błąd*, PZWS, Warsaw 1970.

[6] See: G.D. Oberlander, *Project Management for Engineering and Construction*, McGraw-Hill, Boston 2000.

them, tasks connected to the project (except for routine ones) are often additional and performed during a work day. Complexity is a characteristic which makes the execution of a project more complex and increases the workload of some of the enterprise's authorities.

Another feature of a project is its being time-limited or "of a definite character," however the second term is also understood in terms of costs. The project usually has a specified deadline, which can be closely connected to other plans of the enterprise or depends on financial resources and contractual factors, including penalties calculated for the failure in executing the project plans in a timely manner. It is especially important in case of construction projects carried out as part of projects financed from the national budget and co-financed from the structural funds of the European Union. Hence, we speak about the starting date and the closing date of an undertaking.

The time factor is directly connected to the costs of the undertaking. Hence, another characteristic of a project are its costs or the definite cost character. Every project has a certain budget, which can be calculated and estimated. The costs of the project, especially situations when those costs can be exceeded, are one of the most important aspects of project risk estimation. Experiences of recent years (2010-2012) and months highlight serious problems arising both from the functioning of funds-acquiring mechanisms in the execution of projects (mostly from the EU) and from the provisions of the Public Procurement Act concerning construction projects financed from the resources of the EU structural funds for the period 2007-2013.

In the specialist literature one can also find other approaches to features of projects and their character. Projects can be also autonomous or partially dependant on other measures carried out in an enterprise. In case of complex projects, enterprises decide on establishing separate organizational structure, which performs tasks connected to a given plan. In case of smaller undertakings, additional tasks are given to employees who are directly or indirectly connected to the subject matter of the project or to those, who will be using the effects of the project in the future. There can be also created small separate teams for the purposes of fulfilling tasks related to the project.

The project, as a series of human actions aimed to reach a specific effect can be described by means of three key parameters[7]. These are:

1. fulfilling requirements – effect of the project's execution,
2. costs of its execution,
3. time of its execution.

To correctly execute the project, those three parameters have to be fulfilled.

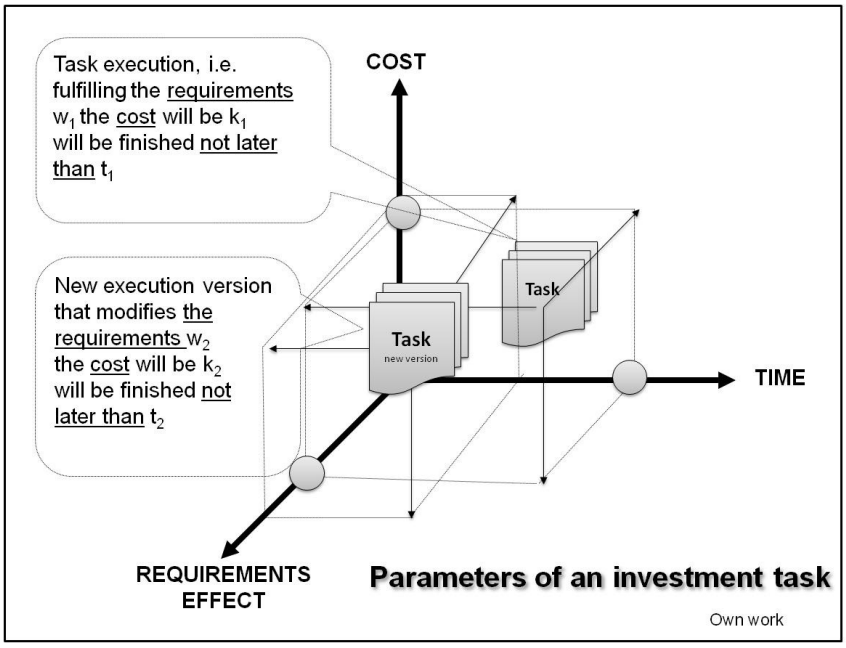
[7] M. Trocki, *Zarządzanie projektami*, PWE, Warsaw 2003, pp. 20-21.

Requirements are the goal which we want to reach. In this article requirements will be synonymous to the scope of project. In case of construction projects, it is described in a formalized way by means of an architectural and technical design or through a functional application programme containing detailed scope of requirements established by the investor for the contractor (in the "design and build" mode). Execution costs assessed or calculated in the form of an estimate contain the work input of people, machines and equipment, as well as material costs and mark-ups. The investor and the contractor perceive the estimated costs in different ways. The investor, estimating the costs of a given project, considers resources which should be set aside for it and whether he can afford the investment. The contractor, preparing to make an offer or to begin negotiations and during cost planning, should take into consideration certain reserves on account of possible rise in prices of the resources during the execution. In case of construction projects, especially long-term ones, the problem of correct estimation of offer costs, taking into account the risk of a rise in prices in the conditions of tumultuously changing external environment, meets with difficulties and, recently, was the reason of bankruptcy of many construction companies. It is also a consequence of the interpretation the provisions of the Public Procurement Act, especially in case of carrying out projects co-financed from the resources of the European Union. Pursuant to the Act, tender procedures presume that the offer price specified in the agreement is constant during the whole period of the project execution, regardless of significant negative changes in the environment, which also cause changes of market prices of construction materials and can be the reason of errors and flaws in projects and other situations, which cannot be predicted at the stage of selecting the contractor.

The execution time specifies the date of the project's execution. In case of construction projects, it is usually given as the dates of starting and finishing the investment or, less often, as the number of days/weeks/months during which the project is supposed to be finished, counting from the date of concluding the agreement.

What is important is the fact that those parameters are dependant on one another and should not be considered separately. Thus, if the project is launched with parameters: w_1 – specifying requirements; k_1 – specifying the planned cost of the investment and t_1 – defining the execution time of the project, changing even one of them forces altering the others (one or both) to estimate them correctly. It means that, if we increase (or decrease) the requirements (the scope of the project), the result should be the change of one (or both) other parameters, i.e. time and costs.

It is illustrated by the following picture 1.



Picture 1. Task in the context of time, costs and effects

Subject literature mentions a "magic triangle" of a project. If the correlations between basic parameters of the project were shown graphically as a triangle whose sides correspond to the three parameters: w, k and t, changing one of the parameters (increasing or decreasing it) would result in altering the shape of the triangle.

Hence, project management is based on specifying the project's parameters using appropriate methods and on supporting the execution with directing actions through assistance units that do not participate in the execution directly. M. Trocki quotes the definition of the American Project Management Institute[8], according to which project management is "a branch of management that deals with applying the available knowledge, skills, tools and techniques for the purposes of fulfilling the ordering parties' needs and expectations."

Especially worth attention is the huge quality change concerning tools used in project management. Network methods, which were being improved over the years, were finally used in currently available personal computers. Those methods allow for quick calculation of entered project schedules and point out risks (e.g. overloading the resources or exceeding the deadline). They allow for dynamic multiple simulations of various situations and obtaining data concerning

[8] M. Trocki, *Zarządzanie projektami*, PWE, Warsaw 2003.

key parameters of the project. Software supporting project management was available in Poland as early as in the seventies of the last century. Programs run on computers such as ODRA, ICL or RIAD, due to long and problematic methods of data preparation (paper carrier), long time of data processing and printing the results and low flexibility of the systems in the context of data modification, were seldom used. It was not until popularization of PCs that using software supporting both preparation and execution of project plans was largely facilitated. However, practice proves that popular applications (such as MS Project® by Microsoft®) not always are able to meet the conditions and expectations concerning the projects. Despite their good performance within the scope of creation and modification of execution schedules, the programs' options concerning resources, especially their monitoring and dynamic application, are of little use.

Construction industry, particularly the so-called contracting, is a branch of economy that handles mostly project tasks. Each construction is a separate project of different level of complexity. A construction enterprise in a specific period of time can perform one or more investment tasks, often individual, not connected to one another and located at different sites. It means that the contractor's construction company can carry out several projects simultaneously and has to coordinate the use of own and foreign resources in such a way so as to guarantee the execution of those projects. This is quite a difficult task, taking into account the fact that each construction is different and almost everyday causes different problems that need to be solved.

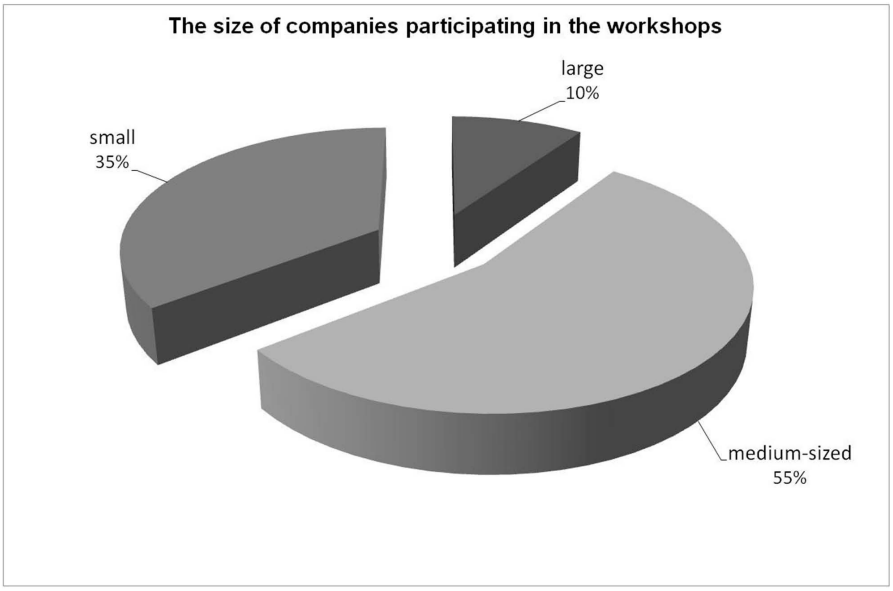
Hence, several crucial questions should be asked:

1. On what leading methods of actions a construction company should be focused?
2. What are the characteristics of those methods and what tools are used to support and manage them?
3. What operating model of a construction company should guarantee its effective functioning in the current market conditions?

Answers to those questions will indicate to the managers of construction companies main methods of restructuring their enterprises, that should help them to survive on the exceptionally demanding and difficult construction market, especially in the nearest future.

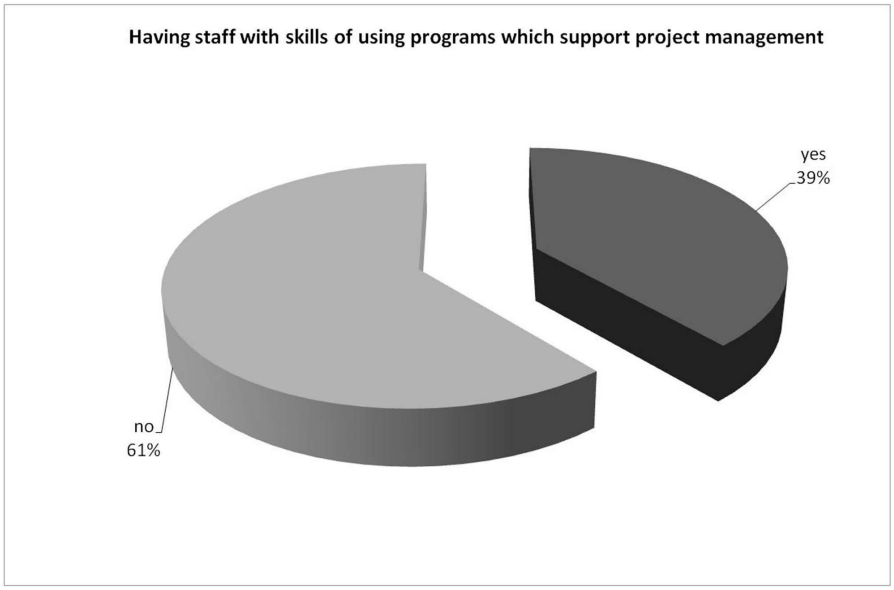
3. Survey Research

In the period 2010-2011, the author participated in the execution of a project co-financed from the resources of the European Union and aimed to improve the competences of the managing staff of construction enterprises. Selected staff from 31 companies, mostly medium enterprises, took part in the trainings and workshops.

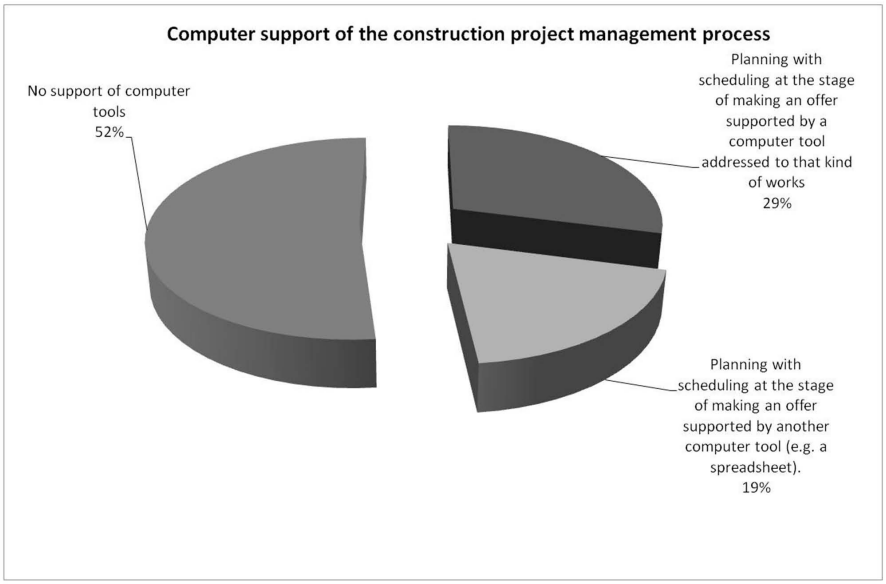


An important goal of the workshops and the training was to prepare the management staff of construction companies to more effective construction management, particularly emphasizing the processes of construction planning and monitoring. During the workshops, a survey research was made among the participants. One of the goals was evaluation of support methods applied in investment projects carried out by the companies, including computer programs.

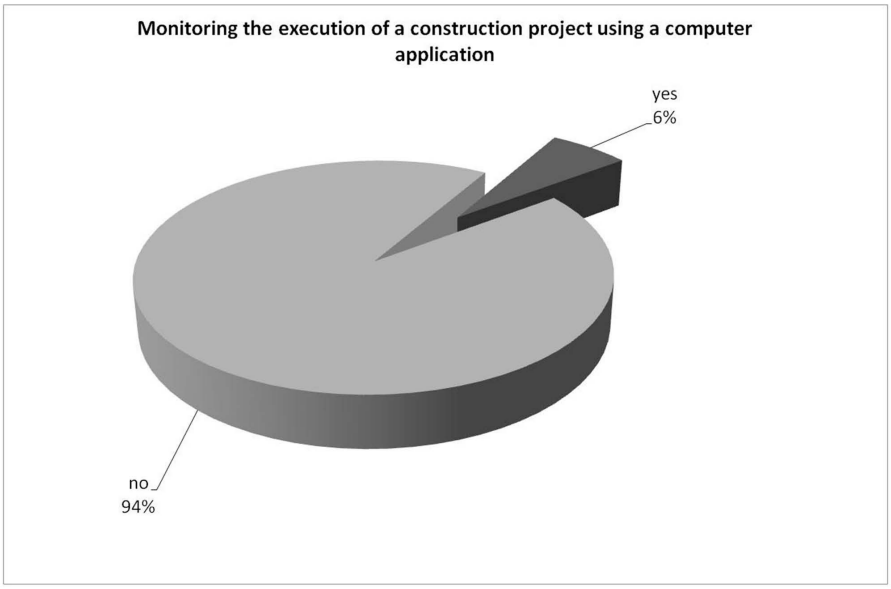
Currently, there are many applications supporting project management processes. Some of them are addressed mainly to the construction industry (for example "Planista"), including free software or programs to harmonize execution of projects that are available for relatively low prices and quite popular commercial programs, such as MS Project® by Microsoft®. Knowledge of those applications is much more common that in previous years. 39% of surveyed people claimed having been trained in using them. That means that many companies saw to the training of their employees, who have at least basic skills of creating schedules using computer programs. However, discussion proved that the main reason of training the staff was not related to the need of using those applications in practice in enterprises, but to the investors' requirements. Investors demand from contractors investment execution schedules and often expect it to be generated by means of a specific application (usually MS Project®).



In practice, that means that the contractor establishes a schedule for the purposes of the agreement and starting the investment and then modifies it only if negotiations regarding deadlines or scope of works are necessary. In fact, during execution of investments, schedules are not updated dynamically, according to the course of works.

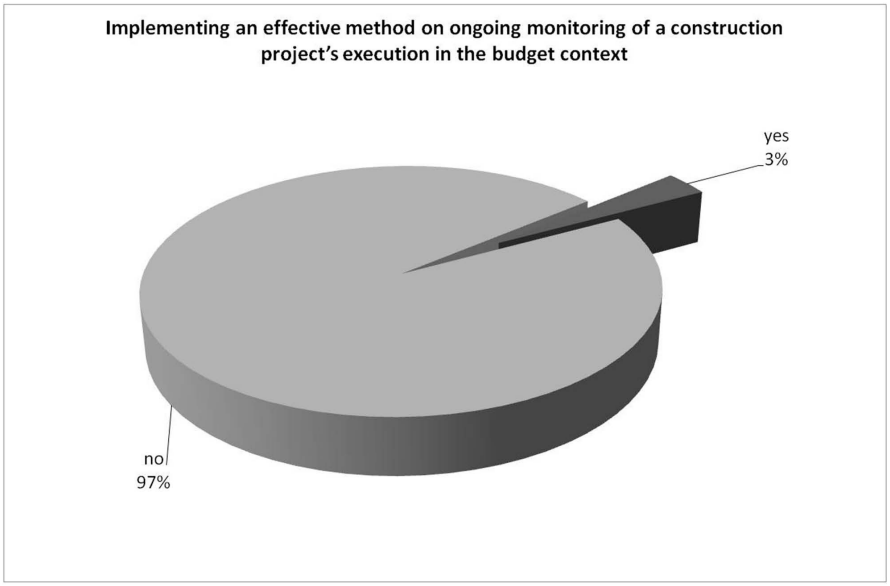


It is confirmed by another survey. Over 52 per cent of the respondents answered negatively for the question whether computer support of construction project management is present in their companies. If any tools are used, they are based on own tables and analysed by means of simple methods, using spreadsheets. 19 per cent of the respondents claimed that they support the process with well-constructed spreadsheets and prepare offers based on them, while the rest (29 per cent) uses specialist tools (for example MS Project®) at the stage of tendering.



Modern programming allows not only for effective harmonizing of investments, but also for monitoring in real time. It means that, in the context of progress status of the construction process, it is possible to obtain satisfying data that can support project management. However, it turns out that those opportunities are rarely used. Few participants informed that they are trying to monitor the course of investments by means of computer tools. Others said that there is no need of those tools in their companies and it is sufficient that the manager of constructions/works notifies about their progress on a regular basis. Nevertheless, discussion concerning that issue provided different conclusions. It confirmed previous observations of the author: the system of notifying management boards of companies by the management of construction works is liable to distortions and oblique statements. Thus, the decision-makers are informed about a serious risk when it is too late to intervene and eliminating the consequences sometimes largely increases the planned costs.

Monitoring the budget of investments turns out to be even less common. It is not conducted in relation to individual tasks, but registered holistically, for the whole investment. It means that the contractor very often has little control over the costs and manages them intuitively, without knowing exactly where and why they are increased. Discussions with the participants of the training course confirmed that it is one of the weakest links in the construction project management process.



However, results of the survey research should be evaluated from the point of view of selecting the participants. They were people from companies that on the one hand show certain shortages in this regard, but on the other hand express their interest, at least formally, in improving competences of the management staff. Thus, a question arises: to what extent is that survey reliable and to what extent does it reflect the above-described situation in Polish construction industry?

The author's experiences as a consultant of construction companies definitely confirm the data quoted. Construction companies, especially small and medium-sized, are poorly equipped with tools necessary to effective construction management. It arises from the fact that there is gap between the offer of basic programs and systems supporting enterprise management, since there are no applications of medium implementation and operation complexity that would be addressed to the construction industry and aimed at companies which are not

prepared to use advance programs (such as ERP systems) yet, while software they use is now insufficient.

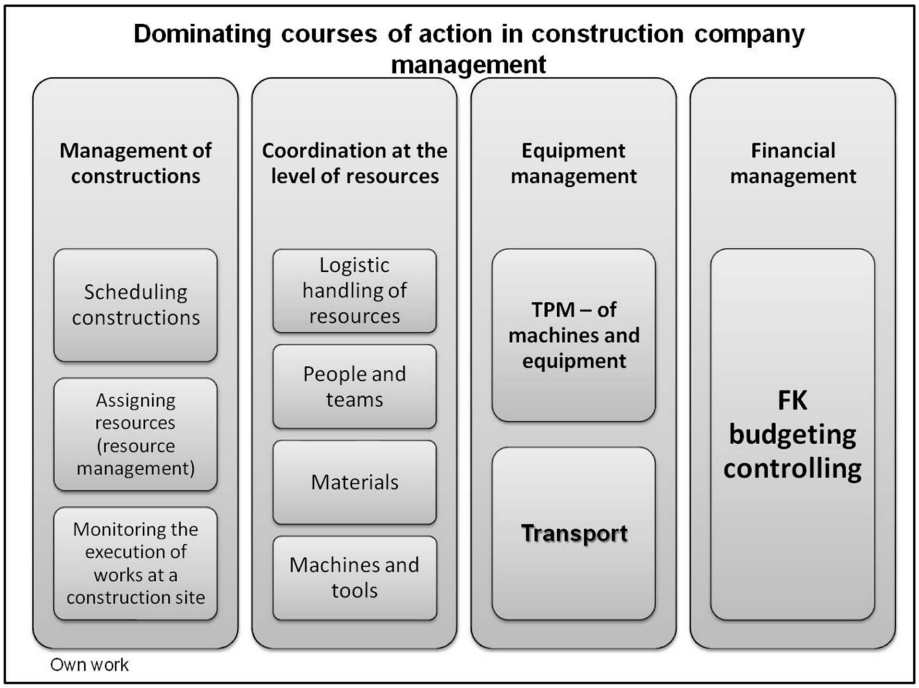
For example, there are no applications monitoring the course of the investment process, including its costs, that would serve as an early warning system informing about disruptions on the construction site and possible risks (regarding terms and costs). The companies handle that problem in various ways, but solutions which the author saw, are either not very precise or have a very delayed effect.

To summarize the results of the survey research and observations of the construction market, it should be emphasized that especially small and medium enterprises are insufficiently prepared to competitive operation on the difficult and demanding market. The are no implemented methods of supporting the management of constructions in progress, not only in the form of good organizational solutions, but also computer tools allowing for effective monitoring of the course of works and sufficiently early reaction to negative aberrations. Those companies are often engaged in large projects as subcontractors. They hardly ever analyse all parameters of their part of works and pay a high price for that. Strong entities that are well-prepared for such actions and win tenders take advantage of every situation to settle all details of the works performed by the subcontractors and charge them with penalties for every breach of the agreement. It should force many construction enterprises to prepare their subcontracting offer carefully.

4. Key Lines of Action in Construction Company Management

Execution of of investment projects requires that entrepreneurs should establish proper organizational structures of their companies. In the author's opinion, such a structure must guarantee focusing on 4 key areas of operation and mutual coordination between them (see: picture 2).

The above-listed crucial lines of action, when properly organized and prepared, are the key to success of every construction company. Without effective support of management, application of those lines of action is impossible, or at least hindered. Such a support and the courses of action related to it are connected with the construction company's operation model adopted by the entrepreneur. The leading area is **construction management**. It comprises: **construction scheduling, resources assignment and monitoring of work performance**.



Picture 2. Lines of action in construction company management

A construction company exists only if it meets its obligations correctly and in a timely manner. Construction management requires careful preparation of constructions on the one hand and proper monitoring of work performance in order to be able to react quickly and effectively to any aberrations and their consequences on the other hand. The starting point is **the investment project's execution schedule**, established by specialists on the basis of the investment documentation and the knowledge about mutual correlations between individual tasks. However, it does not mean that establishing the correct schedule should be based on showing the linear relationship between successive tasks linked by the technological process. Such a schedule, although simple to design, not only limits the possibilities of resource management at the construction site, but also leads to wrong decisions, which often makes it impossible to successfully execute emergency plans forced by various, often difficult to predict, factors (such as weather). A correct schedule, in the author's opinion, must meet the following criteria:

1. taking into account possible options of simultaneous, technologically possible fulfilment of tasks to make the emergency plan as undemanding as possible.

2. the project deadline specified in the agreement or a contract must be set for a later date than indicated in the schedule to provide the contractor with reserve time in case of unforeseen events, disruptions or damages. The time difference between the deadlines of the project and the schedule should result from the the type of project and the contractors' experience gained during other constructions of similar scope. It will be different in case of road investments and in case of buildings.
3. there is no final and unchangeable schedule – the investment process is liable to many imponderables and much uncertainty. It means that every change that causes a deviation in meeting the schedule should be entered into it and taken into account to make it possible to see its influence on the project's deadline. Thus, the schedule is stable until the first disruption.

During the execution of the project, a correctly established schedule is supposed to be used to make the first attempt of **resource allocation**. In practice, resource management means drafting a good plan of works for teams and equipment and eliminating overloads. If the same resource should be assigned to several tasks, which may happen when a construction company carries out several project simultaneously, the same resource (for example a team) may be assigned to work on different projects in the same time. A problem will occur when, planning various schedules, we do not take into account their mutual correlations in case of using the same resources. Such cases were observed by the author in practice at various construction sites, where for example the company's transport was used. It was not an isolated case when the transport was needed in the same time at different sites. Attempts to control the situation, for examples by the reservation system of own resources and optional use of other entities' services in case of large amounts of accumulated work not always led to successful elimination of stoppages due to the lack of transport. There were also cases of incorrect planning when a contracted vehicle had to be handled despite the fact that own transport had just been released and was available. There is no need to explain what a negative effect it had on the project execution costs.

To successfully carry out the investment, it is necessary to **monitor it**. The process must take place at two levels:

a) the advancement of the schedule (progress of works),
b) use of human, equipment and material resources.

Experience suggests that, although the execution status of the investment is monitored by the company's management, mostly due to the fear of exceeding the execution deadlines and potential contractual penalties, the costs themselves are not so closely monitored. In practice, some companies were informed about their loss and profit accounts only after finishing the investment and receiving all invoices. Such a situation makes any repair actions or interventions impossible in the period when the changes still can be made. Faulty organization of performing

an investment task caused also that the teams were particularly subject to work on Saturdays and statutory holidays and were paid extra on that account. Again, practice proves that the staff's earnings contributed much to the increase in overtime working, which often exceeded permitted limits. The problem cannot be solved without system monitoring of the project execution.

Another key line of action is **coordination on the level of resources**. It is connected with the following problems: **logistic service of resources, coordination of assigning tasks to teams, ensuring material supplies and coordination of making the machines and equipment available for individual projects**.

One of key tasks in this line of action is **material supply of the construction site**. The materials are the most important part of the investment costs. Literature sources[9] point out that materials, depending on the type of investment project, constitute from 50 to 72 per cent of all costs. It means that incorrectly organized material management can be the main reason of the increase in investment execution costs. Monitoring planned and actual costs of materials is an extremely important element of effective control over costs during the investment cycle. A question arises: how to organize supply of constructions to be able to control the increase in material costs? Assuming that we act in conditions of a market not subject to sudden and unexpected increase in material prices resulting from the situation on global markets, it is possible to organize an efficient system of acquiring materials that would ensure reliable supplies and savings in costs.

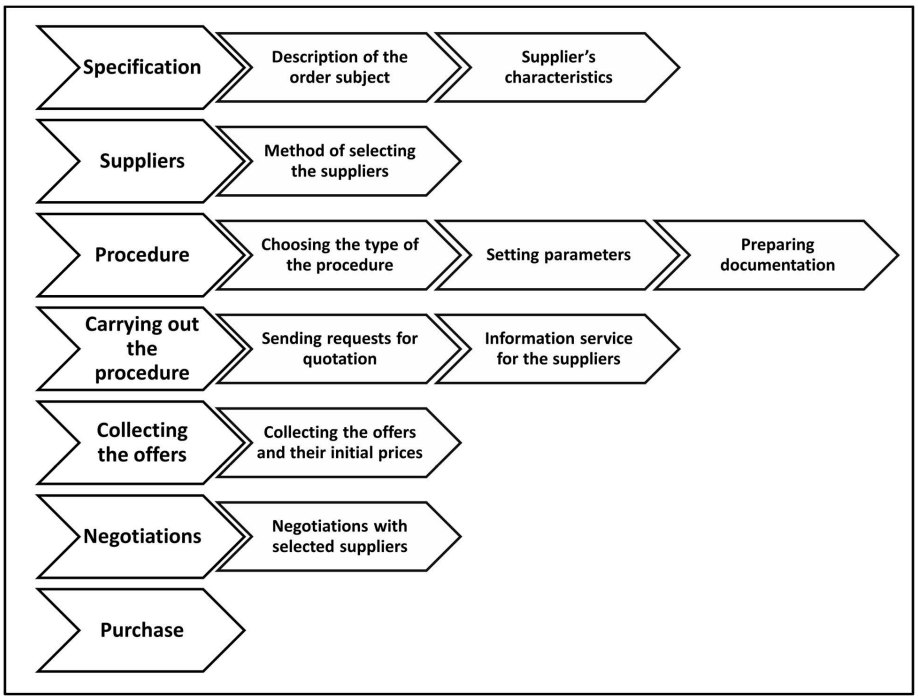
Such a system will function on condition that diversification of supplies and competitiveness will be ensured. However, it is necessary to clearly separate projects that require large assortment diversity (for example those concerning industrial and residential construction business) from projects in which case diversity of materials is low, but quantity consumption very high (for example projects of road construction industry). In the first case, especially small and medium companies are prone to "stick" to dependable suppliers. These are wholesale companies or building depots operating in the investment area. They offer deliveries to the construction site, also in the form of regular supplies (replenishment of supplies, also at night). Are these the cheapest deliveries? Not necessary. Suppliers of the investment's contractor should establish a good, reliable and effective supply model for their company. It must be based on mechanisms ensuring:

a. diversification of offers,

[9] J. Górecki, *Analiza struktury kosztów w budowlanych przedsięwzięciach inwestycyjnych*, Budownictwo – czasopismo techniczne, Wydawnictwo Politechniki Krakowskiej; journal 2 1-B/2010.

b. efficient system of searching for new suppliers that are trying to find their place on the market,
c. competitive prices within the system of shopping platforms.

It is useful to establish a clear procedure of material supply of an investment project. The author believes that in such a case it is possible to use a few years' experience arising from the application of the Public Procurement Act.



Picture 3. Diagram of the course of action when selecting the supplier
Source: own work.

The key element of that process is the correct description of the order (see: picture 3). The contractor of the investment should not have any troubles with that, since the material specification is a part of the detailed design documentation. Problems may occur in case of investments carried our as part of projects co-financed from the resources of the European Union. Disputable and, in the author's opinion, incorrect interpretation of the statutory provision concerning the use of proper names causes that the contractor will not find the detailed specification of a material that, according to the designer, should be used in a given moment in the project. What he will find will be a more or less specific

description of its parameters and he will be forced to choose such a material that will not only comply with the parameters specified in the documentation, but will be also relatively cheap for the contractor. It often causes conflicts at the stage of construction.

The material must be linked to the suppliers. Wide selection of suppliers allows for realistic price negotiations and diversification of deliveries, which may also be needed as an effective negotiation tool. However, at this point we reach the phase of selecting the supplier or suppliers. The more we limit the selection of suppliers, the lesser are our chances to get satisfying offers. It means that open and widely available procedures of getting offers are more effective, especially when the ordering party does not have to apply, sometimes very restrictive, provisions of the Public Procurement Act.

The criterion of selecting offers does not have to be limited only to price. The ordering party is given many options of distinguishing suppliers (terms of deliveries, the system of deliveries, the system of returning the unused material, etc.). Everything depends on a specific case and the rationality of actions taken by people responsible for construction supplies.

The method of sending requests for quotation should be formalized. Documents of the offer that are prepared according to a clear outline facilitate their evaluation and accelerate the choice of the best one. Requests for quotation can be replaced with increasingly more popular tender platforms. They are Internet portals allowing for making a purchase-sale transaction via the Internet. The idea of linking seller's and buyer's interests using the Internet is not new. Auction portals have been functioning online for many years and are extremely popular among the Internet users. They were invented as tools allowing for selling items, which are no longer necessary at home, but they became a powerful market for companies, which place their articles there and gain high sales volume. The Internet market is specific and probably deserves many specialist studies. In this article the author will only highlight its benefits for commercial purposes in relation to B2B (business to business) contacts. According to their creators, tender portals that are addressed to companies, guarantee:

- obtaining the lowest prices for delivery/service/construction works, while observing the correct technical parameters of the offer,
- using the Internet to make efficient purchases and sales,
- facilitating B2B contacts.[10]

[10] see: http://www.platformazakupowa.pl – Open Nexus shopping platform; http://www.faveo7.com – Faveo shopping platform

The author got himself acquainted with the functions of two platforms: Open Nexus and Faveo. Their main ideas are similar, but the portals differ in execution methods and additional options. In both cases it is underlined that the following benefits are notable for both buyers and sellers:

- purchase price discount from 5 per cent to as much as 40 per cent,
- new market for sellers,
- lower costs of getting to the customer,
- transparent purchase proces,
- clear cooperation rules,
- elimination of the cooperation-negotiations conflict,
- economies of scale in case of summing up the demands,
- economy of time spent on searching for suppliers, negotiations and control,
- an opportunity of finding more suppliers.

Additionally, some solutions available online offer options of supporting the work of suppliers and allowing for "quotation" of their services. The software also provides tools to create one's own databases of suppliers, transactions and tenders. Such additional tools and functions are offered by Open Nexus.

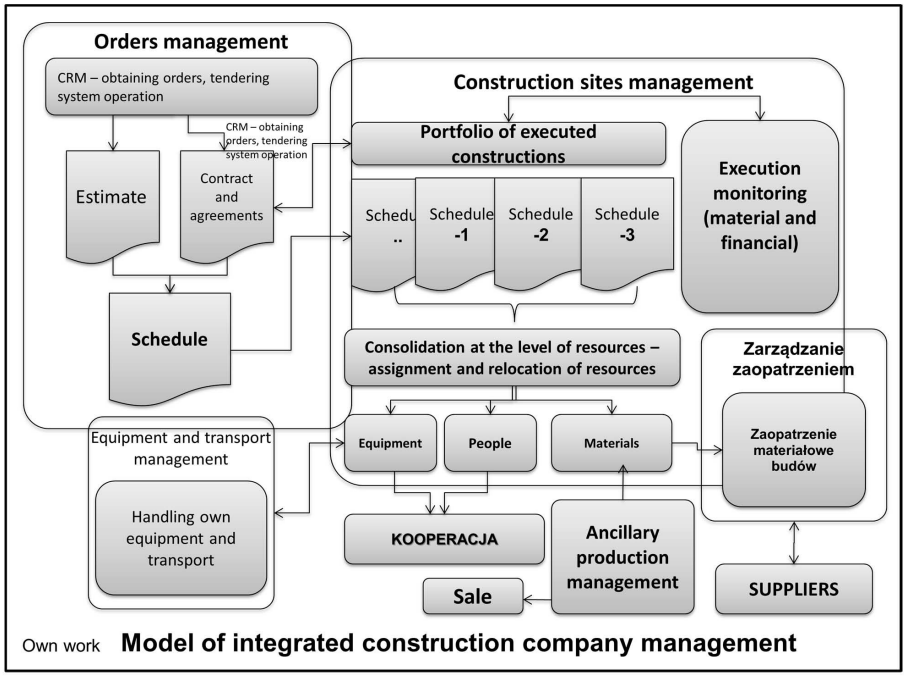
Undoubtedly, one of key tasks of a project execution manager is establishing a well-thought procedure of supplying construction sites in materials.

Construction company often have large bases of tools, including machines and devices necessary to carry out the project, as well as smaller equipment of individual sites. Moreover, they often use their own vehicle transport. Nevertheless, in this regard, changes focused on outsourcing were made. More and more often, hired equipment is used when performing a given task, while vehicle transport is limited to necessary minimum. However, in case of having own stores of equipment, it is necessary to focus not only on their appropriate workload (or renting them, when they are free), but also on their constant operation, proper maintenance, monitoring faults and getting into the habit of daily checks of basic parameters.

Financial management is budgeting of investments and careful monitoring of its execution. Costs should be assigned to specific tasks. Registering their fulfilment must be as detailed as in case of tasks. If we have a good schedule of tasks performance and assign costs to it, it is easy to create a model of the investment's execution costs incurred in time. It will be visible, what resources should the contractor have at his disposal when carrying out the investment. Investment projects are seldom executed according to original plans, which results in the necessity of taking into account changes and revising the costs. Monitoring the status of the costs of the investment, both as a whole and for each individual task, is the basis of an efficient controlling system.

5. The model of integrated construction company management

In such a context, it is useful to look at a construction company according to the model ensuring integrated management. That model is based on practical experiences and comprises several management blocks connected to one another, which together create an effectively operating construction company. It is shown on the following diagram.



Picture 4. A model of construction company management

The process of construction sites management must be preceded by actions defined as the system of getting commissions. Commissions for construction works are to large extent obtained by participating in tender procedures. Another, very common, phenomenon is giving commissions to subcontractors of leading companies, i.e. companies which dominate on the market and win tenders. The tender system, no matter if it concerns public procurement or if it is outside the public system, is the main source of commissions. Hence, the system of getting commissions is crucial for the integrated construction company management model. It was called "**Orders management**" and should be supported by means of a good computer CRM (Customer Relationship Management) system, which would be adapted to the needs of construction companies and would take into

account the main sources of commissions, i.e. public tenders for construction works. It means the support of the tendering process conducted in every company that competes for orders on a public tender basis. Every tender offer must be prepared carefully and well-thought. It has to be pointed out here that tender procedures are formalized and require providing the ordering party with specific documents characterizing the entity (e.g. constructions done, references), specifying the offer and paying the bid bond. It is very important that those works should have appropriate support, otherwise the entity may be excluded from the proceedings. Tendering is expensive and does not guarantee success. Companies often keep statistics of won and lost proceedings, which show that a success is paid with several and even a dozen or so failures.

What should be understood by this quite general phrase: "careful and well-thought preparation of the offer"? It is a set of actions aimed to create the system support of project management. In this article, deliberations concerning the initialization of the project, setting goals and estimating the risk are skipped. Decisions concerning those issues are usually made by highest-level governing bodies and line managers, while people responsible for the project execution generally have no influence on them. They are supposed to act according to top-down decisions, not necessary justified by detailed analyses and execution variants. It is a fact that such a situation is quite often fraught with consequences resulting from underestimation of the project costs or too optimistic assessment of the feasibility of finishing the works in a specified term. This mostly concerns projects carried out on a public procurement basis, in which case the time for analysis and submitting an offer is very short and insufficient to perform reliable, well-though and checked calculations.

At the stage of obtaining the commission, a schedule is not necessary. Usually the ordering party requires it upon signing the agreement. However, we must be prepared to create the schedule of works quickly, if our offer proves to be the winning one. Creating an offer without recognizing more or less how we can fulfil the task entrusted to us by the investor within a specified term is not a good solution. Contractors tend to believe that the most important is to get the order and the problem of performing the task in a timely manner is a side issue, since, even if the contracting entity itself should not be able to finish the works on its own, it can always hire subcontractors. Such a course of action may be taken only when we are sure that the investment can be finished within the term specified by the ordering party.

Assuming that the order was obtained, creating a schedule is absolutely necessary. The core of a good schedule is its appropriate division into individual tasks. A task is the basic unit of the schedule and a set of tasks that are interconnected create the project execution plan. The task should be in accordance with the SMART concept (Specific, Measurable, Achievable, Realistic, Time Bound).

Specific – meaning that the description of the task should specify in a clear and precise way what should be done and what results are expected. Measurability is connected to the assessment of a specific tasks' feasibility. If we are able to determine the level of its advancement, it means that the task is measurable. Achievability is connected to execution possibilities. Tasks planning must be supported with the evaluation of current possibilities of their execution. It is easy to imagine a situation when a formally well-drafted plan of tasks is unachievable within a given term due to the lack of appropriate resources that are required for its execution. Achievability of a task depends also on contractors and to what extent they are prepared to perform it. Being realistic is a feature of a task that determines a chance of its correct execution by the contractors in current conditions and taking into account the required limits. Time of the task's execution is given in specified units (e.g. days) and determines the term within which the task should be accomplished.

The second block of the presented model is **construction management**. It requires consolidation of resources needed to carry out constructions, coordinate supply of materials, equipment and workforce and ongoing monitoring of the tasks' execution. In case of accumulating works or the lack of necessary resources in terms of staff or equipment, it is possible to use cooperative support (subcontractors). Monitoring is necessary for correct construction management. J. Penc writes: "To ensure constant inflow of information, an enterprise should create a system of environment observations and even more – an early warning system that would signalize (warn of) chances and risks".[11] Developing that thought, one has to start from the basic actions of a company. Systematic monitoring of their performance is one of key aspects of enterprise management, since it allows for relatively quick localization of aberrations and risks. Monitoring will provide correct information only when it is conducted exactly according to the tasks planned in the schedule.

In the above model there is also highlighted **equipment and transport management**, which should be organized taking into account the economic calculation. It means such a resource management that would fulfil the company's own needs on the one hand and bring revenue in periods of lower demand in the form of services provided to external entities on the other hand. **Ancillary production management** should be treated in a similar way. It is an activity carried out by construction enterprises in order to fulfil their needs. Manufacturing products in ancillary units is reasonable only when the cost and, consequently, the price is competitive in comparison with the market offer, which not always can be achieved due to low economies of scale or little production experience.

[11] J. Penc, *Decyzje w zarządzaniu*, Wyd. Profesjonalnej Szkoły Biznesu, Cracow 1996, p. 192.

The above model of integrated construction company management reflects also expectations concerning the computer support of the indicated main management blocks. An enterprise should be equipped with a system allowing for creation of construction schedules and their updating according to a given situation. The application should be linked to the cost registration system where they are generated, i.e. resulting from the execution of performed tasks, so it would be possible for the managers to know and to be able to analyse the progress of the investment at its every stage, along with all positive and negative alterations in comparison with planned amounts.

6. Conclusions

Nowadays construction companies operate in difficult and demanding conditions of competitive market. Surviving on such a market requires being prepared to fight for difficult commissions and balance on the edge of profitability, searching for reserves in one's own organization and reasonable, sustainable management of every construction site. It cannot be achieved in an organization that is not adapted to the market's requirements. Nor can it be achieved without ensuring proper management of construction projects. It requires:

- consideration and restructuring of a company according to guidelines indicated in this article;
- careful and detailed tendering and preparation to execution of gained commission;
- effective monitoring of constructions' execution in order to be able to quickly find out any aberrations and risks.

It would be tremendously helpful to introduce well-thought computer tools supporting the above-mentioned tasks, especially those connected to construction projects in progress. Without a well-functioning computer feedback system it is not possible to save the company from the negative influence of its environment.

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PROFESSIONAL COMPETENCES OF A FUTURE MANAGER BASED ON THE EXAMPLE OF PROFESSIONAL AND PERSONALITY COMPETENCES OF INTERNAL AUDITOR

Abstract

In the market economy, realization of business ventures is inherently associated with risk. Especially in times of economic crisis on the world scale, the level of business risk significantly increases. Due to the need to properly assess the risk level and implement appropriate control mechanisms, internal audit units are being established in well-managed companies. Internal audit helps an organization accomplish its objectives by giving the assurance of the effectiveness of processes. The article presents the location of the internal auditor in the organizational structure of a company and decribes in detail required qualifications of the internal auditor prescribed in the International Standards for the Professional Practice of Internal Auditing with the most professional like: CIA, CISA and ACCA. The key issue for the successful performance of the internal audit within a company are personal qualities and necessary attributes possessed. Because of large responsibility and also day-to-day work requiring often to cope with difficult situations resulting from the specifics of that work, internal auditors must have specific personality traits and possess necessary attributes. Internal auditor is a relatively young profession in Poland. At the same time, due to increasing complexity of processes, organisation and current issue of risk in business activity, it is a profession that steadily gains in importance and no doubtly International Professional Standards enforce the auditors to be people with professional qualifications and personal traits of an effective future Manager.

1. Internal Audit and its role in a company

Any business activity is associated with inherent risk. The managers undertake the risk trying to meet business objectives and often they tend to increase its level in order to achieve a greater return on invested capital. In such an environment there is a need to establish within an organization a function that will be responsible for the evaluation of the proper estimation of the risk level and will check if the control mechanisms implemented to properly manage the risk are effective and operate in line with assumptions. In other words, to answer the question if the way of doing business enables to meet the business objectives in a safe, legal and internal procedures complaint manner and at the same time effective and efficient.

The function that is responsible for giving such an assurance is Internal Audit.

According to the International Standards for the Professional Practice of Internal Auditing, issued by The Institute of Internal Auditors[1], internal auditing is an independent objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes. Internal audit helps accomplish the objectives by giving the assurance of effectivenss of the above mentioned processes.

In practice there are two forms of audit activities:

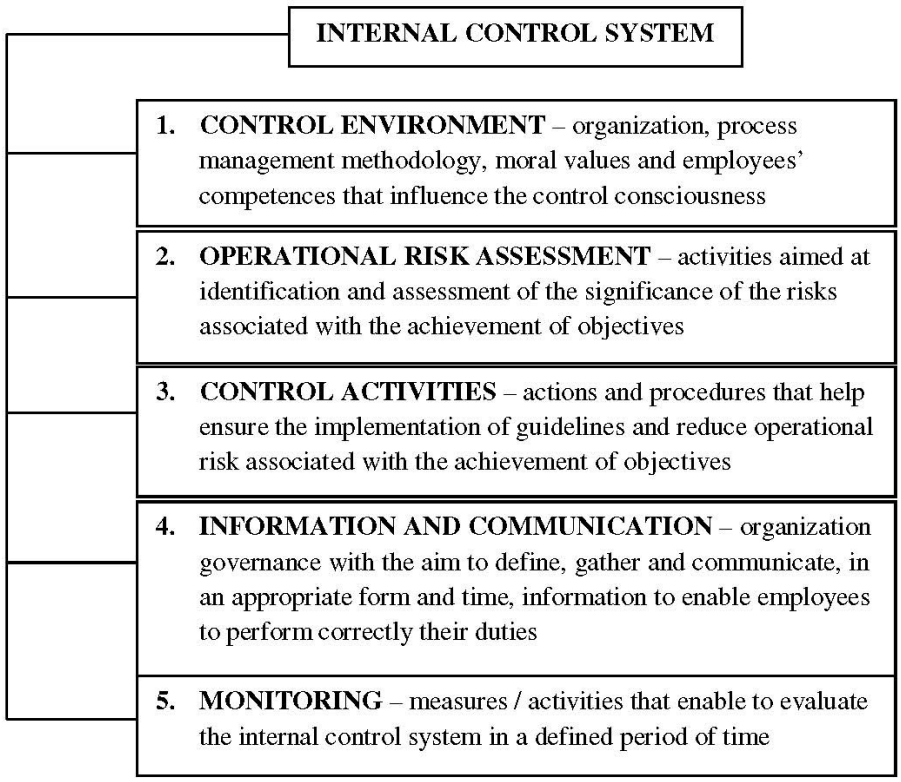
ASSURANCE AUDIT – the purpose is to provide independent assessment of risk management, control and governance in the audited area	**CONSULTING AUDIT –** the purpose is to help the management accomplish its objectives; consulting services may include for example: improvement of operations, process design, trainings

Assurance audit is a type of purely „control" internal audit activity during which the correctness and effectiveness of internal control system in selected processes is verified. Consulting audit is de facto a consulting activity performed by the internal unit of a company, performed most often on the request of

[1] The Institute of Internal Auditors was established in 1941 and is the oldest and the bighest organization of the internal auditors around the world. It has over 170.000 people around the world associated in almost 200 local branches and affiliated organizations. In Poland IIA is represented by Stowarzyszenie Audytorów Wewnętrznych IIA Polska.

Management Board. It should be noted however that it is more frequent in larger enterprises.

Internal audit constitutes a part of internal control system in a company. Internal control system encompasses five mutually related elements:



Internal control environment constitutes in fact an institutional framework in which the internal control system is established. Internal audit can be classified as part of the monitoring of internal control system.

There are usually three types of internal audit in the Polish enterprises:

- **Financial audit** – whose primary area of interest is to evaluate the financial statements in accordance with financial auditing standards. The objective of the audit is to give assurance that the financial statements are complete and have been prepared in accordance with applicable law. Due to the fact that the financial audit tasks are performed by the external auditor, often internal audit work in this scope is limited to assistance to the review conducted by the statutory auditor.

- **Operational audit** – consists primarily in analysis of processes and assessment of their effectiveness and the extent to which the objectives were achieved. All most important business processes like sales process, procurement process are subject to this type of the audit.
- **IT audit** – the scope in particular includes the assessment of the effectiveness of information systems and additionally security of IT systems.

2. The main tasks / responsibilities of internal auditor

In order to define responsibilities and specific tasks of an internal auditor, we should first define the goals set before the system of internal control as a whole.

Internal control system in a company should provide:

- well-organized and safe way of doing business, in relation to clearly defined goals,
- compliance with law and internal regulations, general policy, plans and internal procedures,
- identification and adequate control over risks taken, their mitigation and protection of assets,
- effective and efficient use of resources,
- integrity and reliability of financial and management information.

The Management Board is responsible (on the whole company level) and Senior Management (within the area of responsibility) for the creation, implementation, operation and monitoring of effective and efficient internal control system in a company. What is important, internal control should be organized in such a way that it is a part of business processes.

So the question is what is the role of internal audit? Well, the primary responsibility of internal audit is to perform independent assessment of internal control system in a company and inform the Management Board and the Audit Committee about its reliability, efficiency and effectiveness.

In particular, the role of the internal auditor is:

- process analysis, most often based on risk-based methodology (so called risk-based approach),
- participating in audit engagements, as a member of an audit team, and performing audit procedures in accordance with approved audit program,
- assessing and informing about efficiency and effectiveness of internal control system and risk management, compliance and governance processes including security of IT systems,
- reporting of significant issues and risks and performing necessary investigations in high risk areas (eg. likelihood of fraud, non-compliance with internal and external regulations),

- issuing recommendations relating to identified internal control weaknesses and monitoring of their implementation,
- coordination of cooperation with external auditor and external control authorities / bodies in order to ensure conditions for effective performance of their tasks,
- performing tasks requested by the Management Board, the Supervisory Board or the Audit Committee, maintaining appropriate level of impartiality and independence,
- participation in consulting projects aiming at process improvement / optimization,
- participation in design of new / modified control systems in selected processes.

3. Internal audit in the organizational structure of a company

Proper location of internal audit unit in the organizational structure of a company is essential to ensure effective operation of internal audit or even possibility to exercise its duties at all. This is important, given the task of carring out reliable professional and objective evaluation of the effectiveness of internal control system, maintaining full independence.

In practice, there are four possibilities of „location" of internal audit in organizational structure of an entity:

- Direct functional reporting of Chief Audit Executive to CEO,
- Reporting of Chief Audit Executive to the whole Management Board (functional reporting to the whole Management Board but disciplinary to one of the Management Board members),
- Reporting of Chief Audit Executive to one of the Management Board members, usually the one responsible for finance area,
- Reporting of Chief Audit Executive to the person / authority outside the Management Board.

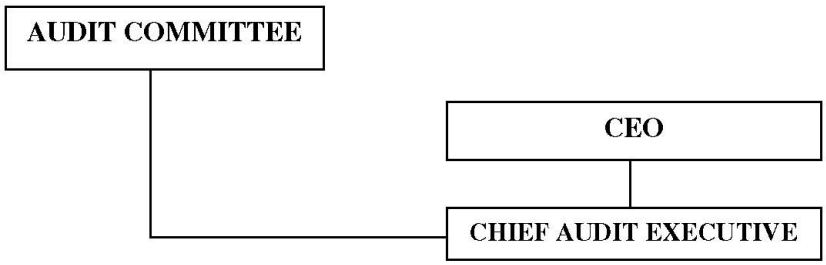
The general rule that provides the optimal location of internal audit unit in an organizational structure of a company assumes that internal audit should be located in such a place that guarantees that it will be completely independent of any pressure and be able to act in a way that allows to express objective and independent opinion about the effectiveness of internal control and risk management systems.

According to the International Standards for the Professional Practice of Internal Auditing, the internal audit activity must be independent, and internal auditors must be objective in performing their work. Independence should be interpreted as the freedom from conditions that threaten the ability of the internal audit activity to carry out internal audit responsibilities in an unbiased manner.

While objectivity is an unbiased mental attitude that allows internal auditors to perform engagements in such a manner that they believe in their work product and that no quality compromises are made. Objectivity requires that internal auditors do not subordinate their judgment on audit matters to others.

According to the recommendations included in the International Standards for the Professional Practice of Internal Auditing, Chief Audit Executive must report to a level within organization that alows the internal audit to fulfill its obligations.

In practice, the most effective solution is direct reporting of Chief Audit Executive to the Audit Committee, being the subcommittee of the Supervisory Board. It provides the full organizational independence of internal audit. At the same time, within the organizational structure of a company, Chief Audit Executive reports directly to CEO.



Source: Prepared by author of the article.

Such a functional reporting means in practice that the Audit Committee:

- approve internal audit charter,
- approve annual and long-term internal audit plan,
- approve the decision about nomination and dismissal of Chief Audit Executive,
- receives from the Chief Audit Executive internal audit activity reports including execution of approved audit plan.

Such an organization, according to the International Standards for the Professional Practice of Internal Auditing, is a model solution that should be targeted in order to ensure an effective functioning of the internal audit unit.

The Audit Committee supports the activity of the Supervisory Board. For this purpose, members of the Supervisory Board acting as the Audit Committee, supervise, on behalf of the Supervisory Board, the coherence, effectiveness and efficiency of internal control, risk management systems and also compliance and internal audit functions. In particular, the Audit Committee monitor the financial reporting process, performance of financial revision and independence of statutory auditor authorised to audit financial statements. The Audit Committe

oversee the processes carried out in a company, in terms of their compliance with the applicable laws and internal regulations of the company.

The scope of authority as well as the scope of responsibility of the Audit Committee are defined solely by the decision of the Supervisory Board. The Chairman of the Audit Committee submit to the Supervisory Board (most often after every Audit Committee meeting) the Audit Committe's activity report, arrangements made and issued recommendations aimed at improving the company's operations.

Audit Committee members are appointed by the Supervisory Board from among its members. In practice, Audit Committee is a subcommittee of the Supervisory Board.

In practice, the Audit Committee perform its duties through the internal audit unit. At the same time, the Audit Committee monitor and evaluate the performance of Chied Audit Executive.

It should be noted that under the Polish law, in accordance with art. 86 section 1 and section 2 of the Act of 7th May 2009 on statutory auditors and their self-government, entities authorized to audit financial statements and public supervision, the group of entities (in which the Supervisory Board has been set up) has been defined, that are legally required to establish the Audit Committee. There are:

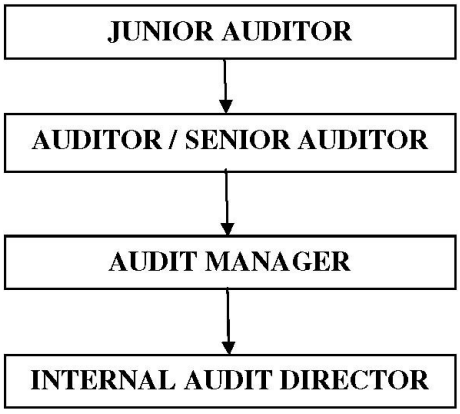
- issuers of securities admitted to trading on the regulated market of the EU country, with the headquaters on the Polish territory, with the exception of local government units,
- domestic banks, excluding cooperative banks,
- insurance and reinsurance undertakings,
- electronic money institutions,
- brokerage entities except those operating only in the reception and transmission of orders to buy and sell financial instruments or in investment advice.

Internal audit performs the activity based on the annual and long-term plans that should be approved by CEO and accepted by the Audit Committee. Any changes to the annual and long-term plans need approval of the Audit Committee.

It is a good practice that the Chief Audit Executive periodically submits to the Management Board and the Audit Committee, reports of the internal audit activity, including follow-up reports presenting the extent and timing of implementation of audit recommendations issued to improve the internal control system (not less frequently that once every six months).

4. Career path and professional experience

The model career path in internal audit looks like following:



Source: Prepared by author of the article.

The scope of responsibility and complexity of the tasks performed clearly increase with the promotion to a higher position within the structure of internal audit unit.

Junior auditor is a person who just starts in the profession of internal audit so his/her basic scope of duties includes participation in the audit team and performing relatively simple audit procedures indicated by the audit team leader, often under the guidance of more experienced auditors. At the same time a junior auditor participates in process risk analysis performed at the beginning of audit engagement.

With the professional development also the scope of duties and responsibility extends. **Auditor** and **Senior Auditor** are responsible (of course to varying degrees), apart from performing audit procedures, also for preparing audit reports and discussing audit conclusions with the audittees. At the same time they also participate in the annual planning process, performing the risk assessment of particular business areas with regard to include them in the annual audit plan.

The standard profile for the position of Specialist (Auditor) in internal audit unit is about 2-years of experience in internal or external auditing or in the operating position in other department, the best financial or production. At the same time it is required to have a university degree, preferably in economics or technical and professional qualification CIA, ACCA started (more about qualifications in chapter 5).

Manager in internal audit unit is a position responsible for performing self-reliantly audit engagements in a company and also for self-reliant managing of audit team, being the person responsible for the whole task, selection of cooperators and work coordination. It should be noted that in smaller companies, where the internal audit function has been established, the position of Manager is the highest in the audit area, reporting directly to the CEO and/or to the Audit Committee.

Additionally Audit Manager participates in annual and long-term planning process of internal audit unit's activity.

The required profile for the position of Audit Manager is about 4-5 years of experience in internal or external auditing or in the operating position of senior specialist in other department, preferably financial. Higher education is obvious, completed or ongoing professional qualifications valuable. In companies with foreign capital the fluent knowledge of foreign language is a must.

And finally **Internal Audit Director** which is the highest position in the structure of internal audit in a company. It occurs almost exclusively in large companies, that are characterized by high complexity of processes. In some organizations, the Internal Audit Director holds also the position of Board Member.

The Internal Audit Director is responsible for the comprehensive management of the internal audit function in the company, it means for:

- preparation of risk-based annual and long-term audit plan, that covers all crucial business areas of the company,
- execution of approved audit plan,
- regular reporting to the Management Board and the Audit Committee regarding the extent to which the audit plan has been finalised,
- effective coordination of the whole activity of internal audit unit,
- giving the assurance that the activity of internal audit unit is compliant with the International Standards for the Professional Practice of Internal Auditing, including regular monitoring of the level of independence and objectivity of the internal audit,
- recruitment, motivating and continuous professional development of internal auditors,
- building and maintaining professional and cooperative relationships with heads of operational areas of the company.

The following professional experience is expected in case of Chief Audit Executive:

- about 7-years of experience in internal or external auditing or in the manager position in other department, preferably financial,
- experience in the positions related to the cooperation with external control authorities and external auditors,

- experience in managing and motivating employees,
- experience in working with modern IT systems,
- fluent knowledge of foreign language.

5. Professional competences of internal auditor

Internal audit is conducted in diverse legal and cultural environments, in organizations differing in size, complexity, objectives and organizational structure. However, regardless of the differences, professional qualifications of internal auditors are the condition for the effective execution of internal audit tasks.

The importance of appropriate professional qualifications has also been strongly emphasized in the Code of Ethics of the Institute of Internal Auditors, where appropriate qualifications were listed among the four basic principles that are expected to be implemented by internal auditors. It was stated that providing internal audit services, internal auditors are required to take advantage of the necessary knowledge, skills and experience. In particular, internal auditors are required to:

- engage only in the services for which they have necessary knowledge, skills and experience,
- perform internal audit services in accordance with the International Standards for the Professional Practice of Internal Auditing,
- continually improve their proficiency and the effectiveness and quality of their services.

As a rule, the internal auditor should have a maximum depth knowledge of the functioning of the company and the industry in which the company operates.

In practice, the most important skills in the profession of internal auditor, are those in the field of financial management, financial and management accounting, cost accounting, law and information technology.

It should be noted that due to various processes within the company, in practice it is impossible for one person to have the knowledge that allows his/her to perform audit activity, providing added value in all areas. For this reason, the key issue in the development and management of the internal audit unit is to establish a team that has different skills, enabling to evaluate the internal control system in a comprehensive manner. For example, the internal audit unit should consist of a person with qualifications in the field of accounting and finance as well as employees with qualifications in the field of information technology, IT systems security as well as those with a legal background.

This obligation arises also from the International Standards for the Professional Practice of Internal Auditing that provide that not only internal

auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities but also the internal audit activity collectively must possess or obtain such a knowledge, skills and competencies.

The internal auditor should also have a broad knowledge of best practices, in particular in the area of operation of the company. This is crucial taking into account the requirement of internal audit to issue adding-value recommendations to improve the internal control system in the company. The reference to best practices, standards is often the most optimal solution.

In addition to qualification requirements for internal audit staff, there are also certain requirements for members of the Audit Committee. It should be noted that, in accordance with the already mentioned Act of 7th May 2009 on statutory auditors and their self-government, there is a requirement that at least one member of the Audit Committee has professional qualifications in accounting or financial auditing (art. 86 section 4 of the Act). However, the requirements for the desired qualifications have not been defined and standardized in the Act, thereby leaving the decision to the competent authorities that nominate a person to carry out the tasks of the Audit Committee.

In the internal audit profession, apart from the education and professional experience, additional professional qualifications are very important. It is crucial for internal auditors to confirm their knowledge, skills and competencies by obtaining appropriate professional designations and other confirmations of their qualifications. The most famous and desirable in this profession are CIA, CISA and ACCA diplomas.

International qualifications CIA (Certified Internal Auditor) are the most famous in the world professional qualifications for internal auditors. Having a CIA diploma is a proof of both adequate theoretical preparation as well as professional experience in internal auditing. It is widely recognized that people with the CIA title present a high level of professionalism and appropriate professional qualifications. At the same time they fully understand the principles of business activity, associated risks and internal control system.

CIA title is granted by the Institute of Internal Auditors and is recognized throughout the world, both in private companies as well as in the public sector. Additionally in Poland, according to the Act on public finance, the holder of CIA title is authorized to perform internal audit activity in the public sector entities.

Other certifications relevant to the work of internal auditor, awarded by the Institute of Internal Auditors:

- **CGAP** (Certified Government Auditing Professional) – being the technical certificate designed for the auditors employed in the public sector,
- **CFSA** (Certified Financial Services Auditor) – being the technical certificate proving the knowledge and skills in the field of banking, insurance and securities trading,

- **CCSA** (Certification in Control Self-Assessment) – cerification program designed for the practicioners of control self –assessment (CSA – Control Self-Assessment),
- **CRMA** (Certification in Risk Management Assurance) – certification in the field of risk management assurance. Obtaining the certificate proves the ability to ensure the functioning of risk management and governace in key business processes in the organization. It also helps educate the senior management and the Audit Committee on risk and risk management concept. Additionally it allows to add value to the organization by focusing on the strategic risks in the business activity of the company.

International qualifications CISA (Certified Information Systems Auditor) are widely recognized qualifications for IT auditors. CISA certificate is awarded by ISACA – international association of professionals working in fields relating to auditing, control, security and other aspects of the management of information systems. ISACA currently have 86.000 people (members of the association and specialists holding the certificates awarded by ISACA) from over 160 countries.

In addition to CIA qualifications, other certifications awarded by the Institute of Internal Auditors and CISA qualifications, highly valuable in the work of internal auditor are **ACCA international qualifications**.

ACCA (*eng. Association of Chartered Certified Accountants*) is the international organization headquartered in the UK, bringing together financial experts from around the world. To become a member of the organization, you must demostrate relevant work experience and pass 14 exams within ACCA program.

ACCA qualifications are among the most respected professional qualifications around the world. They are recognized in all Member States of the European Union. ACCA is a comprehensive program in which the emphasis is both on financial management skills and decision making as well as on strategic management. The holders of ACCA diploma can demonstrate expertise and current knowledge in the field of:

- international financial accounting and reporting standards,
- strategic decisions making,
- financial and business strategies (marketing, HR),
- Polish tax law,
- commercial law,
- internal audit.

To sum up the topic of internal auditor's qualifications, it is necessary to pay attention to one additional important aspect. A key responsibility in the work of internal auditor is the requirement to maintain high level of the professional qualifications and their continuous improvement.

In addition, a significant commitment for chief audit executive, expressed literally in the International Audit Standards, is the need to acquire appropriate assistance or support in the situation when internal audit staff is lacking appropriate knowledge, skills and other competencies necessary to complete the whole or part of the audit task. In practice, it means the need to contract external experts with relevant expertise to perform audit engagement.

6. Characteristics / attributes of internal auditor

Internal auditors are responsible for performing analyses and making assessments with due professional care and also for reliable, objective and timely reporting of gathered information and data together with conclusions and assessment.

Because of large responsibility and also „control" specific of their day-to-day work requiring often to cope with difficult situations, internal auditors must have specific personality traits and possess necessary attributes.

In accordance with the Code of Ethics of the Institute of Internal Auditors, internal auditors are expected to apply and uphold the following principles:

1. **Integrity** – the integrity of internal auditors establishes trust and thus provides the basis for reliance on their judgement. In particular internal auditors are obliged to:
   - perform their work with honesty, diligence and responsibility,
   - observe the law and make disclosures expected by the law and the profession,
   - not to be knowingly a party to any illegal activity, or not to engage in acts that are discreditable to the profession of internal auditing or to the organisation / employer.
2. **Objectivity** – internal auditors exhibit the highest level of professional objectivity in gathering, evaluating and communicating information about the activity or process being examined. Internal auditors make a balanced assessment of all the relevant circumstances and are not unduly influenced by their own interests or by others in forming judgments. In particular internal auditors:
   - do not participate in any activity or relationship that may impair or be presumed to impair their unbiased assessment. This participation includes those activities or relationships that may be in conflict with the interests of the organization,
   - do not accept anything that may impair or be presumed to impair their professional judgment.
3. **Confidentiality** – internal auditors are obliged to respect the value and ownership of information they receive and do not disclose information

without appropriate authority unless there is a legal or professional obligation to do so. In particular internal auditors are obliged to:

- be prudent in the use and protection of information acquired in the course of their duties,
- not use information for any personal gain or in any manner that would be contrary to the law or detrimental to the objectives of the organization.

Due professional care is crucial in the internal audit profession, especially taking into account the importance and potential consequences of conclusions drawn by the internal audit. Internal auditors must exercise due professional care by considering the:

- extent of work needed to achieve the engagement's objectives,
- relative complexity of processes and tasks,
- probability of significant errors, fraud or noncompliance,
- cost of assurance in relation to potential benefits.

To be a professional and effective Internal Auditor, it is essential to possess, besides professional experiance and comprehensive knowledge, also a number of "soft" characteristics, including:

- even-temperament, calm in crisis situations,
- assertiveness, being resistant to pressure,
- analytical thinking, ease in identification of problems and drawing accurate relevant conclusions,
- intelectual curiosity, openess to new knowledge, standards and best practices,
- discernment, perfect understanding of data and its complexity and interlations,
- resistance to stress and ability to work in stress environment,
- excellent communication skills,
- accuracy, regularity,
- ability to cooperate with people with different personality styles, openess to other views,
- team work skills (it refers both to audit team and also, in case of consulting engagements, to special task groups established to prepare / implement new solutions in a company),
- persuasion, ability of factual reasoning,
- professionalism – auditor should undertake only the tasks for the completion of which he possesses appropriate knowledge and experience,
- ability to make clear assessments of facts.

In case of Internal Auditors who are Managers / Directors of Internal Audit units and manage human resources, their scope of required competences is widen and additionally includes:

- high leadership and organisational skills,
- team management skills,
- ability to set goals and enforce their execution,

- ability to properly motivate people,
- ability to develop professional and cooperative relations with Senior Management, including Management and Supervisory Board members,
- proficiency in brief / concise communication, properly dedicated to appropriate recipient (in case of communication with Management or Supervisory Board the ability to point out the most crucial things is essential).

The particular attention should be paid to the fact that internal auditor should possess excellent communication skills, both orally and in writing (due to the need to prepare written audit reports). The effective communication is absolutely crucial in internal audit work due to the fact that interviews are one of the fundamental audit procedures and proper understanding of the conclusions included in the audit reports is necessary for preparing appropriate action plans for implementation of audit recommendations.

In addition to communication skills, both verbal and written, the auditor should also have the ability to actively listen. Obtaining relevant information during a conversation is the basis of effective work in this profession.

The key skill required in the auditor's work, especially in the case of the head of internal audit unit, is the ease in building positive and constructive relations with other managers within a company but, what is important, without prejudice to the consistent and professional execution of internal audit duties and responsibilities. Internal audit is often perceived within an organization as "control" unit and as a consequence it inspires respect, if not saying reluctance or aversion. In many cases it results from improper understanding of internal audit's role in providing adding-value however it may also results from the style of performing this function by auditors. Due to that, creating of positive and professional image of auditor in an organization is of crucial importance. An important tool in this respect are positive relationships with senior managers developed by the head of internal audit unit.

In a day-to-day work, an internal auditor often experiences conflicts, mainly due to different assessment of the same facts, events or control mechanisms made by an auditor and audittee. Thus an important attribute of an internal auditor is the ability to effectively manage conflict situation and ability to persuade his/her position, also through the selection of appropriate arguments / justification.

Internal auditor is a relatively young profession in Poland. At the same time, due to increasing complexity of processes, organisation and current issue of risk in business activity, it is a profession that steadily gains in importance. Both professional practice as well as requirements of the International Standards enforce the auditors to be people with professional qualifications and those who manage the internal audit units in the role of Managers or Internal Audit Directors should possess the set of characteristics of an effective future Manager.

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ORGANIZATION OF MAINTENANCE MANAGEMENT DIRECTED ON PRODUCTIVITY IMPROVEMENT

Abstract

One of the essential factors deciding on enterprises competitiveness is ***an effective organization of maintenance management process****. In contemporary literature on maintenance management you can more often meet the notion of management and organization and the significance of some factors is emphasized such as planning, rationalization of organization of structures, changes in quality and quantity of staff, labour system improvement, control etc., in realization of usage and economic aims of businesses.*

Observations of activities and maintenance management of technical objects should be an inspiring factor for undertaking research activity. It is the management (that is directing) of maintenance systems which is the essential problem of contemporary operations.

The author of the article presents the issues of organization of maintenance management on the basis of 20 selected building-construction businesses located on Poland premises. The studies describe current condition of organization systems of maintenance management and indicate on possibilities of organizations improvements in order to increase machines productivity.

In the work the elements significant for productivity of machine and devices organization maintenance system were distinguished. The author makes the machine effectiveness improvement conditional on ***current and long-term activities included in the framework of coherent organization and management system of the business which convey the productivity potential of the studied enterprises****.*

Economic development and the increase of highly advanced technologies and enhancing competitive potential makes the companies search of new methods of economic results improvement and analyzing these results. “Fast transformations of global economy pose the developmental challenges to societies, corporations, single entrepreneurs, and also managers. They refer to the

phenomena of keeping the pace to those we compare ourselves in order to maintain the competitive position" (Kunert O. 2008)[1]. That is why the survival of many companies nowadays depends on the ability of effective competing, products quality and costs level. This effectiveness should be shaped in all activities in the company.

One of the essential area of company activity of whose efficient functioning results in, a remarkable degree, to company's aims achievements and influences the shaping of its financial results, is the area of maintenance management. In recent years we have been observing significant increase of the role the maintenance management plays in conducting the effective financial policy of an enterprise, It also has its implications in systems of maintenance management. The change of economic system and the necessity of competing forced the rationalization of activities in the range of machine and devices maintenance management.

Evolution of the attitude towards effective management of the maintenance started a development of organizational systems aimed to productivity increase. Technical and technological development supported by progress in IT poses new challenges to theoreticians and practitioners involved in this science. Apart from changes of the technical nature there are also few trends in the management which changed point of view on operating science. New philosophies of management, such as JIT, Lean, TPM, RCM emphasize the significance of effective maintenance management which when integrated with the company strategy, can become a very important element **in shaping of competitive advantage**.

It is to be expected that increasing interest, in Poland and the world, in issues connected with management of maintenance will beneficially affect the effectiveness of machine usage, quality products and productivity results.

In the world of advancing technology development and specialization of production, high class rivalry and creation of new solutions is a necessity for companies. .Observing of global economy phenomena indicates that we have to do with a "new economy" in a quality sense posing developmental challenges. (Kunert O., 2008)[1] Searching ways of costs limiting by companies, increasing products quality, realizations of deliveries on time cause needs resulting from globalization. Undoubtedly, growth of competition caused a rapid evolution of technology and the increase of customers' demands – at the same time resulting in the development of science on operating.

Observations of new phenomena and processes evoke a lively discussion of scientists, also in Poland, on the subject of revising many assumptions as to usage of machines and organization of these processes. Different business

[1] O. Kunert, *Budowa kompetencji innowacyjnych wyzwaniem rozwojowym polskich przedsiębiorstw*, Wydawnictwo Politechniki Łódzkiej, Łódź 2008.

practices used in this area justify the need of researches and analyses referring to a correct operating in different economic sectors.

According to Downarowicz O.[3] "The rank given to usage issues and, consequently, detail of analyses and shaping usage problems, as 'proper', depends on ***the significance of usage objects for operating activity, its costs and results, value of objects, level of threat they pose, risk connected with its usage, degree of wear and tear and other specific factors".***

Science of equipment operating demonstrates solutions in the range of procedure with technical objects which should be maintained in utility ability so that to provide optimum conditions of their activity. Accuracy of these analyses and solutions in usage depends on taking into account in studies and operating practice the variety of particular branches of industry, age, technical condition and differentiation of the machines under usage and paying attention to economic conditioning and concrete applied values.

Currently science offers a lot of models as referred to operating, as well as it gives the possibility of their commercial application. Usage of the above mentioned solutions is becoming more difficult, due to the advance in production system technology and automation of devices of very precise steering systems. The mentioned development caused that diagnosis and solution of problems concerning technical objects has become more complicated and because of economy scale can become more and more expensive. As a result of above discussed issues it is very important to adjust not only technical activities but organizational, economic, social and legal as well to concrete technical problems.

In practice, these activities are often performed intuitionally, they often are popularization of positive and negative experiences of workers. It happens, though, that they are undertaken basing on operating science, which is still rare in Poland. Recently Polish companies have started to take part in this more demanding market and started to mark new dynamics of activities of strategic range. More and more companies notice the chances of improvement of their competitiveness, and, what's more, machine productivity in effective usage of devices in accordance with certain rules, realizing that the lack of operating science causes negative economic results.

High level of transformation pace in operating made IT indispensible, as an essential tool supporting organization and making decisions. This fact, to a high degree, makes this science younger where new concepts substitute the old ones because they are newer and they act better in this varied technically environment.

Operating management is supported by using computer devices in different problems of maintenance. Contemporary companies, in many cases, use IT systems offered on the market. Multifunctional IT systems cause deep changes in company functioning, both in organization of particular processes as well as in the area of staff teams.

It is quality change which disturbs a total subject structure of the enterprise and due to this demands a special attitude in management[2]. These systems are known as CMMs and based on transactional data bases where the information on operating objects and their surrounding is gathered. The need of processes computerization of maintenance significantly affects the degree of organizing the maintenance, complexity of technical apparatus and enterprise environment[5].

In the library of 'eksploatyka[6]' a new notion of modern literature appeared describing existing changes and characterizing new trends, strategies and proposals, the application of which is to rationalize operating process, to lengthen to maximum the period of operating technical objects, taking into account the effectiveness of this process[7]. This literature bases on characteristics in discussion of selected notions and conceptions, not mentioning their applied values and practical application.

Recent years have brought essential changes in the approach of companies to machine and device maintenance management. It has been noticed that the machine maintenance system and its suitable organization can be a source of many profits for the company, financial included. Evolutionary changes, so far seen in many other fields,, have started to contain the maintenance management as well.

In seventies accessibility of the device, safety, competence are gaining new dimensions. The production companies are becoming more and more automated and organizationally complex. The response to the above changes was shaped in the area of maintenance management conception, such as TPM (total maintenance management oriented on productivity) and RCM (maintenance management directed on reliability – strategy according to reliability), whose key element was to ensure failure-free work of machines and devices during the period of operating. Automation and development in Information technology have made new techniques of maintenance easy to use in industry.[8]

High turbulence of surrounding, non-continuity of events and globalization of processes and structures are basic features of contemporary economic world and the response to them, not only in the sphere of management, but also in the "field" of maintenance management was to be a concept of strategic management.[9]

Approximate dynamics of maintenance development plays a huge role in shaping strategies concerning maintenance management. Stormy surrounding conditioned by big and changeable transformations of a market, technique and evolving societies, all these need, from managers, skillful and fast adjustment of potential, structure, and culture of the company to new conditions.[10]

Maintenance management in majority of companies experiences „strategic" crisis. Majority of activities is of a pure operational character, often reactively oriented. The evolution of maintenance management described earlier and rising growth of quality demands in this field should result in tendency of taking care

of machines in companies, and activities of maintenance management can not be of a temporary intervention character. Ensuring a proper functioning of machines and a full control over technical condition, as well as rising reliability are the instruments of improvements of machine service efficiency and also clues of possible ways of productivity improvement.

That's why the lack of strategy of maintenance and other analyses of technical condition of machines can not characterize the company the aim of which is to maintain the competitive position on the market, taking care of a customer and economic effects.

Good strategy of maintenance management must be connected with the remarkably more general strategy referring to material resources and processes. It demands co-existence of many forms and using many methods of maintenance management in the very same company. In such process anticipation and preventive activities must dominate, at the extent of limiting the activities consisting in reacting to inefficiency results (failure, stoppage…).[11]

In order to successfully connect the efficiency and effectiveness of activities of maintenance it is necessary to establish "proper" strategies of maintenance management. The maintenance management demands application of flexible strategies which take into account dynamics of developmental changes in productive systems and also specificity and variety of technical objects in these systems.[12]

Strategy of maintenance management is a way of behaviour in reference to machines and devices, as a result of which it is possible to achieve a desirable condition of maintenance management system. Creation of strategy thus needs thorough theoretical knowledge and practical skills in using theory in practice and vice versa, enriching theory in new experiences empirically achieved in practice. It should be modified or exchanged depending on some factors, for example quantity.

Development in the range of maintenance management systems and output of management science pose huge challenges to managerial staff of management maintenance in a company. Practical knowledge and skills of analyzing and designing of systems of maintenance add to a profile of people managing technique resources. The discussed challenges, activities and directions of progress both in maintenance management and in organization science depend on operating problem scale in a company, on the size and significance of technique resources being at the disposal of an organization.

In late sixties accelerated growth of interest in issues of maintenance was reported in Poland. There appeared new conceptions and methods of maintenance management organization. More and more often a significant influence on properly organized maintenance on productivity started to be emphasized. All these made the author undertake the empirical trial of verification of these views.

In 2006-2009 studies were performed on maintenance management organization in 20 construction enterprises located in different parts of Poland, looking for essential factors which are to guarantee desirable availability of machines at the optimum usage of possessed resources. **The aim of the studies was to diagnose with the aid of a survey questionnaire the quality of maintenance management organization in selected companies and defining which elements of organization system of machine and device maintenance management significantly influence on the growth of machine productivity**. Applied research tools were directed on the diagnosis of maintenance management systems and their rationalization.

Issues of effective maintenance management are specially essential in the case of building-engineering machines whose improper usage can lead to faster wear and tear processes, unexpected natural damages (breakage), can cause increase of acute corrosion processes, which consequently leads to remarkable increase in costs. In order to monitor maintenance management organization efficiently and to study its influence on shaping productivity in a company it is necessary to begin with diagnosis of its condition, evaluation of quality of its activities in maintenance management and to establish the category in organization which form this productivity.

The author of this article distinguished endogenic factors of productivity construction and made organizational efficiency conditional on quality of organizational activities in the range of seven categories describing maintenance management organization existing inside a company: i.e. in organization strategy, in organization structure and labour division/sharing, in planned activities of maintenance management, procedures and specifications, system of information flow, technical infrastructure and organizational culture.

For more precise analysis of influence of the influence of particular categories on productivity increase, in the range of each of 7 indicated categories, factors best characterizing given category were isolated. This concept bases on such defining and describing the strategy, procedures and forming the structure, the proper dependencies and forms of which lead to productivity increase.

Results of quality evaluation studies of maintenance management organization

As a result of studies the evaluation of actual operations range of the maintenance management realized in companies was performed. The following were assessed: existing strategy of maintenance management, procedures, documents in accordance with completeness, familiarity and usage by staff, the degree of really realized activities resulting from the assumptions formulated both in a formal (documented), and informal way – but declared by organization management.

The aim of the study stage was the evaluation of improvement factors of productivity according to 98 factors.

1. Strategy

One of the essential categories affecting productivity growth is organization strategy in maintenance management. This strategy should be a part of complex organization strategy or strategic plan accepted in a given company and it should consist a basis of a built systemic solution of issues of maintenance management, called **maintenance management system**

In majority of studied organizations the lack of strategic conceptions was stated, only in one case a strategic conception was characterized by completeness of strategy preparation process and internal logic and coherence in documents.

Operations in maintenance management in majority of studied companies are performed intuitionally or on the basis of experiences of people working there.

Only one organization possessed a strategy as a part of maintenance management, others possess only its fragmentary elements, as a rule not preceded by any earlier implementation analysis.

There exists, though, in companies, a conviction as to the necessity of establishing the maintenance management strategy in which it could be necessary to take into consideration the direction of evolution of maintenance management and consciousness of benefits which can result from an effective organization in a studied area.

Only in one company TPM systems, 5 S were introduced whose task is to improve company productivity.

Table 1. The number of companies studied in the category strategy, which achieved particular point evaluations

	Studied factors within category maintenance management strategy	Number of companies – point scale				
		0	1	2	3	4
1.	Quality of diagnostics material preceding strategy building and current, directed on its modification suitable to changes	15	1	2	2	
2.	Basis for strategy establishing	14		4	1	1
3.	Issues perspective of maintenance in company's operations strategy	14		2	3	1

4.	Coherence of strategy of maintenance management with strategic assumption of the whole company and other implemented systems	14		4	1	1
5.	Proper criteria of strategy choice	15		4	2	
6.	Type of applied strategy of maintenance management	14		1	4	1
7.	Ability for dynamic change of strategy on the background of changes in the environment	14		3	3	
8.	Legibility of the strategy	14		2	4	
9.	Correct monitoring of realization of strategy and its modifying according to new, changing conditions.	14		2	3	1
10.	Detail of the strategy,strategy correlation on concrete operation programs	14		4	2	
11.	Reliability of processes of strategy realization monitoring	14		5		1
12.	Advance of strategy realization	14		2	4	
13.	Familiarity with the strategy by staff	14		3	3	
14.	Full or fragmentary application of Lean, 5S, TPM programmes	14		5	1	

Source: author's own study.

2. Organizational structure and work share

In majority of studied companies the issues of maintenance management is not clearly reflected in a studied organization system, and the organization structure as a part of maintenance management is not adjusted to realization of particular functions this maintenance management is supposed to fulfill. Number of workers employed in maintenance management services or performing related tasks is, from the point of view of realized functions, not sufficient; it is also not adjusted to current needs resulting from the range of subject tasks. Studies confirmed legitimacy of creating effective structures taking into account strategies, key competences, eliminating wastage through limiting number of hierarchical ranks, delegating entitlements to lower ranks, decreasing the participation of team staff workers, reduction of unnecessary activities within coordination, controls, agreements, task interpretations.

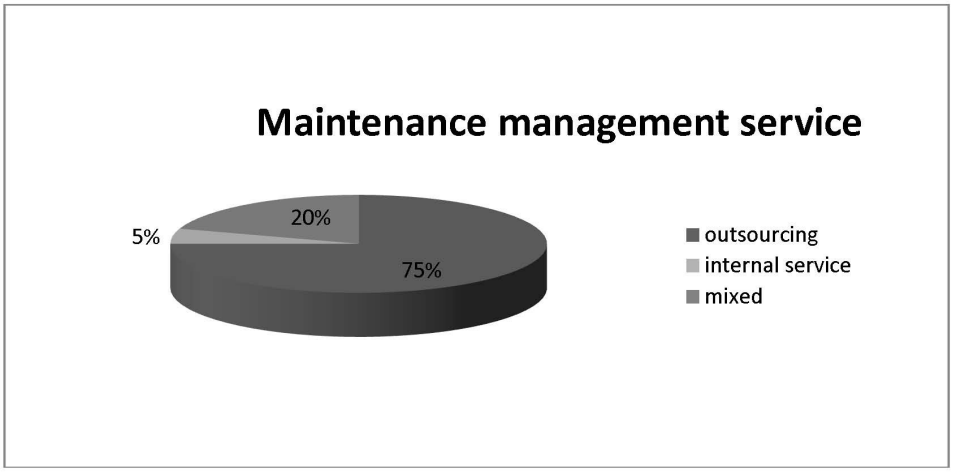
Table 2. Number of companies in a category organizational structure and work division/share, which achieved individual point evaluations

	Studied factors within category organizational structure and work division/share	Number of companies – point scale				
		0	1	2	3	4
1.	Issues perspective in organizational system of a company	1	7	6	5	1
2.	Adjustment of organizational structure within MM to realized functions	1	2	11	6	
3.	Number of maintenance management workers		4	11	5	
4.	Scope of services realized outside the company (outsourcing)		3	10	6	1
5.	Competence of maintenance management service workers		5	7	8	0
6.	Formal qualifications (for operator as well)			12	7	1
7.	Accuracy of responsibilities and performed jobs MM		3	12	5	
8.	Formalization scope		2	12	6	
9.	Responsibilities range and entitlements for workers participating in maintenance management processes (operator included)		2	11	6	1
10.	Knowledge of responsibilities and entitlements by workers		4	10	5	1
11.	Range of responsibilities for an operator		6	7	4	3
12.	Trainings		2	12	5	1
13.	Decision-making entitlements on managerial posts		4	10	6	
14.	Entitlements and skills of outer companies ‘ workers used by a company.		6	8	5	1

Source: author's own study.

In seven organizations under the study the range of outsourced services was basically adjusted to aims and possibilities of an organization; in 13 companies isolation of services within maintenance management was considered as non-economical and improper.

In some of the studied companies the maintenance management department in the firm was isolated on an externalized basis. The externalized companies ("daughters"), at the beginning, provide services nearly exclusively for a "mother" company. Such behavior led to, first of all, transferring of "personal costs" of maintenance management to "outsourced services" position – so the result is ostensible. The choice of outsourcing company as to its promptness and quality of services in 6 companies was considered as proper.



Graph 1. Results of studies of maintenance management services organizing in selected companies
Source of the study: author's own.

Managerial staff in majority of studied companies recognized external isolation of maintenance management services or a form of temporary preservation as the most proper and most economical way of functioning. In 8 companies competence of maintenance management services workers was assessed as proper, whereas in 12 – as insufficient. In 15 companies a partial lack of responsibility cover and performed work in maintenance management was reported, then in the rest of companies no divergences were stated

Scope of responsibilities and entitlements for workers (operator included) in companies was defined in a sufficient degree and the workers know their duties and responsibilities.

Formalization scope (for example legible organization scheme, organizational rules) in only 6 companies was assessed as proper – they were mainly companies possessing ISO 9001 system.

In 7 companies scope of responsibility and entitlements for workers, documents defining entitlements and responsibility were stated in a precise way; in the rest it was described as general. In 6 enterprises workers know their responsibilities and entitlements.

In 7 companies majority of maintenance procedures are performed by operators (multifunctioning) – they realize current technical service and participate in repairs. Operators themselves repair small breakdowns, whereas more serious damages are reported to maintenance management workers or to outsourcing services. Machine operator participates in appointed servicing performed by external organizational units or workers of internal maintenance management.

In 14 studied enterprises decision-making entitlements of companies' managers were unsuitable; company's board decide on many issues connected with maintenance management.

Trainings in maintenance management were assessed in 6 companies as suitable (adjusted to needs and machine specificity); in other enterprises trainings are rare as they are costs-consuming.

2. Formalization and planning maintenance management operations

Fundamental task of a rational maintenance management is, first of all, planned activity which is to ensure reliable machine and technical devices work. Achieving of this aim is possible by establishing and performing proper operations in maintenance management. In 12 companies the selection of performed servicing activities in these firms turned out to be improper, ill adjusted to machine specificity and current condition of the company, MM activities were not clearly defined or are realized in an insufficient degree. Deadlines of servicing plans are not always met (12). In 8 studied companies a schedule of servicing was appointed, and operations performed to the plan. In 14 enterprises lack of proper servicing was stated, and consequently – fast and efficient reaction to breakdown.

Time limits for technical servicing of machines and technological devices are set by workers and outsourcing companies' workers themselves (12). Other autonomous activities within maintenance management are rather occasional and rarely are of a worker's initiative.

Table 3. Number of companies studied in the category planned operations in maintenance management which gained individual point evaluation

	Studied factors in category planned maintenance management activity	Number of companies – scale point				
		0	1	2	3	4
1.	Selection of servicing operations		6	6	8	
2.	Promptness in completion of maintenance management		5	7	7	1
3.	Establishing and realization of servicing schedule		7	5	7	1
4.	Planned, preventive repairs		6	7	7	
5.	Speed of performed repairs	9		5	6	
6.	Other autonomous MM activities		1	15	3	1
7.	Organization of renovation		1	7	6	6
8.	Planned controls		10	2	8	
9.	Basis of defining technical service time limits of machines and technological devices		9	3	7	1
10.	Basis of defining frequency of servicings		8	4	7	1
11.	Range of damage, stoppage time and cost		9	7	4	
12.	Regularity in MM tasks realization		9	5	6	
13.	Anti-corrosion protection plan and set actions	1	10	4	5	
14.	Registration and analysis of work time and costs of UR	1		13	3	3

Source: author's own study.

As the study shows, the organization of renovations (refurbishments) in a company is poor – there is a lack of technical and economical evaluation of usefulness of the renovation, study and establishing of renovating standards and suitable quality and acceptance of renovations. Activities of maintenance management have a key significance for company productivity but still many firms do not pay enough attention to this problem – in none of the studied organization any analysis or registration is made as to the time of machine stoppage, and activities performed in case of breakdown are less then efficient and very rarely analyzed.

In none of the companies active time of machine work during individual months is analyzed, as well as some tendencies in using nominal time of machine work degree connected to temporary work in companies is not taken into account. This is extremely essential from the point of view of organization of maintenance management operations, as these operations can be properly incorporated into company's work rhythm.

In ten companies ranges of individual current services (everyday, weekly, etc.) were defined, but in others it was stated that there is a divergence in defining the range of current services and frequency of these actions. Anti-corrosion protection plan, so essential in long-term usage, exists only in 5 companies. As many as in 14 enterprises there is no analysis and registration of work time and costs of MM, which has a significant importance on measurements of productivity in studied companies.

4. Procedures and specifications

Studied companies are characterized by a low degree of formality of tasks and procedures.

Table 4. Number of companies in category of procedure and specifications which achieved individual point evaluations

	Studied factors in category procedure and specification	Number of companies – point scale				
		0	1	2	3	4
1.	Description of MM functioning		12			3
2.	Organizational procedures in defined MM processes		12	5	2	1
3.	Specification of detailed action for machines and devices		13	3	3	1
4.	Realization degree (or realization) of organizational procedures			5	3	1
5.	Monitoring of procedure realization in MM		12	5	2	1
6.	Protection degree of procedures in operational materials		9	8	2	1
7.	Delivery effectiveness		1	16	1	2
8.	Defining and contents of control lists of machine critical points		11	6	2	1
9.	Documentation of procedure realization		11	5	3	1

10.	Contents of procedures of analyzing renovations and repairs quality		11	5	3	1
11.	Specification of spare parts		10	7	1	2
12.	Protection procedure degree in spare parts		10	5	3	2
13.	Manuals enabling checking of technical conditions and safety measures prepared by co-workers of Work Standards Inspectorate and Office of Technical Inspection		13	4	2	1
14.	Control of devices in accordance to EU		12	5	2	1

Source: author's own study.

In majority of studied companies there are only single organizational procedures in concerning defined processes. Realization degree of organizational and technological procedures is not big. In none of the companies there is a monitoring of procedures concerning the maintenance management. In companies there is a lack of detailed specification of spare parts. As a rule, parts are ordered without any procedures, in companies there are not qualifying lists of suppliers classified as to services, spare parts and operating materials providers, and rules of their evaluation and qualifying. In 15 companies the protection degree of procedures in spare parts section was recognized as insufficient. In 3 plants there are specifications of spare parts; realization time guaranteed by a supplier was also defined there.

In 17 studied companies contents of control lists of machine critical points was not defined. In companies lack of machine and device control in relation to EU demands was stated, together with defects in manuals enabling checking of technical condition and safety measures prepared by Work Standard Inspectorate and the Office of Technical Inspection (17).

5. System of information flow

Table 5. Number of studied companies in category information flow system, which achieved individual point evaluation

	Studied factors in category information flow system	Number of companies – point scale				
		0	1	2	3	4
1.	Documentation of activities and results in the range		14	3	3	
2.	Detail and usefulness of information		11	6	3	

3.	Reliability and completeness of information from the point of view MM system effectiveness		13	4	3	
4.	Presence of feedback information in MM		11	6	3	
5.	Information flow in hierarchical systems		10	7	3	
6.	Damages registration		12	4	4	
7.	Protocols of machine technical condition (servicing)		10	6	4	
8.	Documentation of service acceptance		11	5	4	
9.	Records of performer services and the method of their documentation		11	6	3	
10.	Manuals availability on posts (post, organizational, technological)		12	6	1	1
11.	Taking into account recommendations in records concerning the range and time limit of next service		11	4	2	3
12.	Checking of records of periodic services performed by staff		12	5	2	1
13.	Condition of technical – mobile and technical documentation for all devices of the company and its availability		12	5	3	
14.	The range of informative systems application for effective realization of tasks and service		12	4	4	

Source: author's own study.

In 15 enterprises documentation of activities and results concerning maintenance management was described as partial, unclear and inaccurate. Part of documents is rarely used by workers and it is incomplete.

There is also lack of detailed descriptions of all breakdowns, actions connected with operating and warnings claimed by workers.

In majority of enterprises there are no records providing evidence of realization of any activities for maintenance management or these records are not regular, unclear and inaccurate. In some enterprises breakdown registration is conducted on the basis of breakdown cards. These records and causes of breakdowns are not practically analyzed in detail in any organizations. These records are conducted carelessly and irregularly, they are difficult to analyze and it is impossible to draw credible conclusions. Technical-movable documentation of machines was in a good condition, mainly in new companies, whereas in some older enterprises it was not easily available or it was absent.

Companies do not conduct registration and analyses of computer data; some of enterprises plan to create reference data base in order to gather and analyze information concerning maintenance management. Paper documentation is often stored in bad conditions and places, and is more susceptible to damage.

6. Infrastructure

Table 6. Number of companies studied in category infrastructure, which gained individual point evaluation

	Studied factors in category infrastructure	Number of companies – point scale				
		0	1	2	3	4
1.	Equipment of warehouse in spare parts and tools		12	2	6	
2.	Supervision on spare parts economy and tools condition		11	6	3	
3.	Economy of lubricating materials		8	7	5	
4.	Quantity and quality of lubricating and oil materials		9	3	8	
5.	Quantity and condition of additional, for example, diagnostic equipment of maintenance management		11	6	3	
6.	Monitoring of water and energy usage		11	4	4	1
7.	Supervising of equipment usefulness being at the disposal of service maintenance management workforce		10	7	3	
8.	Documentation of equipment and warehouse		7	9	4	
9.	Workplace equipment		6	7	7	
10.	Methods of assembling parts		6	7	6	1
11.	Location of (reference) warehouse		8	5	6	1
12.	Evaluation of material suppliers and condition of devices (infrastructure)		10	8	2	
13.	Degree of organizational correctness and ergonomy of posts		10	8	2	
14.	Measurements of current machine efficiency, control of contemporary settings with producer's parameters	17		1	2	

Source: Author's own study.

Equipment of warehouse in spare parts was too modest, mainly due to costs reduction. In companies possessing own repair workshop, technical objects and tools for measurements being on warehouse disposal, were under very poor supervision (they were inventoried and their status was defined).

During repairs, if it is possible, replaceable parts are applied, not original spare ones. On the basis of records it is impossible to state objectively if such action is economically justified

In none of studied companies, fast-wearing out parts were defined in a formal way, and a minimum stock of these parts was also not defined. In reference warehouses stocktaking is not performed. Many purchases are probably not justified (before order is placed to a supplier nobody checks if this part is in a warehouse).

New and worn-out part of technical objects being in reference warehouses are not gathered separately (70% of studied enterprises). Only in reference to very expensive parts of technical objects, operating materials recommended by a producer are applied, for the rest – substitutes are used.

In many companies no responsibility for operating materials economy was assigned and there are not any settlements of accounts of their usual wear and tear in reference to particular technical objects.

7. Organizational culture

In 6 studied companies involvement and self discipline of maintenence management workers was assessed as big. Only in 5 studied enterprises it was rcognized that workers are sensitive to all symptoms of threats which can be due to maintenance management.In 13 companies workers do not improve their professional skills. In only 2 companies team work was pointed as an important element of quality improvement in maintenance managemnt. Workers in majority of companies are not allowed to express their opinions freely. In 8 studied firms workers can expect support and help from their superior, Self control and self discipline of workers in jobs referring to maintenence management is moderate. In the workplace the atmosphere is relatively honest and open.

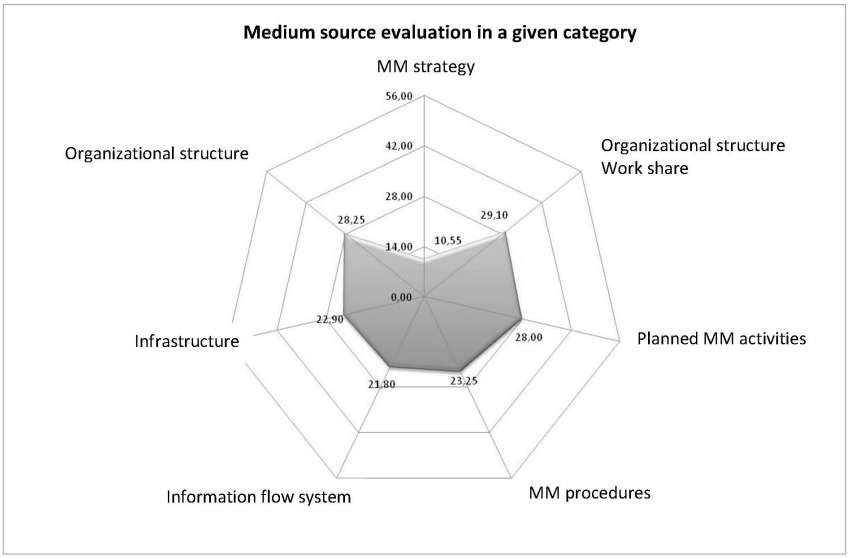
On the basis od the researches the evaluation of particular companies was achieved, in the form of a list of source points being the total sum of particle evaluations (98 factors). In the source points ranking, 8 companies achieved the value higher than medium, and three enterprises respectively stood out from others. 14 enterprises achieved results between 26 and 38% of maximum number of points. It means that the evaluation of these companies in this list is exceptionally low. Existing condition of companies in the category organizational structure and work share was assessed the highest. Not very high

medium evaluations were in the category infrastructure, information flow and procedures. Analysed data are demonstrated on Graph 2.

Table 7. Number of studied companies in category organizational culture, which gained individual evaluation points

	Studied factors in category organizational culture	Number of companies – point scale				
		0	1	2	3	4
1.	Involvement and self-discipline of MM workers		3	11	2	4
2.	Self consciousness of dangers in MM		2	13	4	1
3.	Tolerance to all negligence both on the side of mangers and workers		1	11	4	4
4.	Improvement of skills and development of knowledge by workers			13	6	1
5.	Assurance of information, resources and stimuli for workers enabling achievement of necessary skills		8	8	4	
6.	Improvement of team work skills in order to improve quality of MM products		5	13	2	
7.	Delegating of entitlements by a superior		10	8	1	4
8.	Knowledge on evaluation rules on a superior's own work			14	5	1
9.	Worker's access to strategic assumption and information of a company		7	8	5	
10.	Support and help from a superior		3	9	7	1
11.	Freedom at expressing opinions		8	10	1	1
12.	Cult of active creative approach		6	8	5	1
13.	Atmosphere at the workplace		5	9	4	2
14.	Pride from being a part of a company		8	7	4	1

Source: author's own study.



Graph 2. Medium source evaluation in a given category
Source: author's own study.

The fact that is worth mentioning is that in the category "Maintenance management strategy", 14 companies did not get any point. It means the lack of functioning of any systemic solutions referring to formation of strategic visions of maintenance management of a company.

As a part of an accepted model factors affecting company productivity and activities and resources used for realization of the process were identified. With the help of market research, ability of selected factors for productivity increase was assessed. The aim of these studies was to indicate the dependence on selected factors and functions of productivity increase, organizational system included.

The result shows that among all studied categories the biggest influence on productivity increasing in maintenance management are, subsequently, formalization and planning of MM operations, then organizational structure and work share and organizational culture.

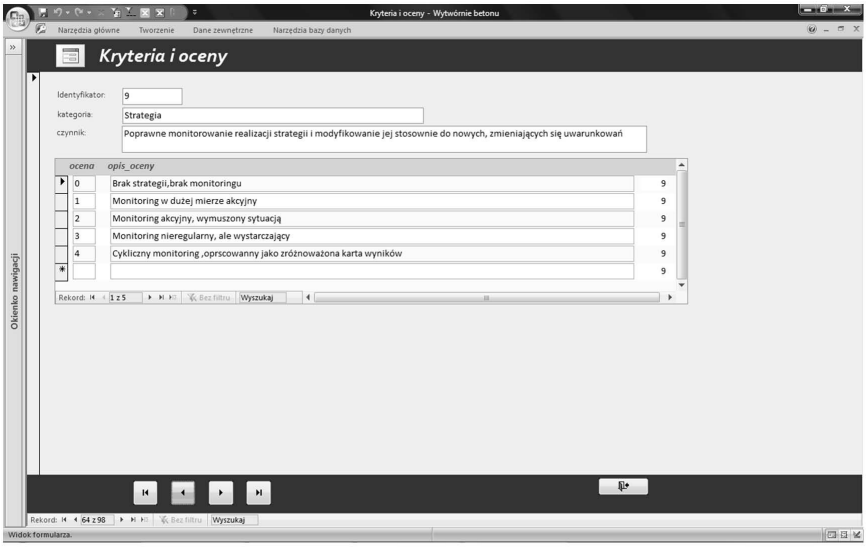
Diagnosis of condition of maintenance management organization and finding elements in which activities connected to organization and management could give the best results in increasing productivity, are the indispensable pieces of information in a proper realization of maintenance management processes.

More attention paid to maintenance management as an essential process in organization and conviction as to its remarkable share in shaping economic results of a company caused the rise of the rank given to **activities of productivity improvement in this subject area**.

Efforts in order to improve productivity **are more effective due to application of** management **good processing tools, systems and programmes supporting services activity of maintenance management** of a company. In order to analyze and diagnose of studied factors of productivity improvement in companies, information tools for registration and data processing could be created. Two-theme approach to this problems will be appropriate:

1. Creating the database application for registration of data and emission of basic results indispensible for analysis, lists referring to data analysis method applied included.
2. Export of data from the base to a designed spreadsheet in such a form, as to enable the multi-surface evaluation of partially processed data and emission of graphs and lists of suitably selected composition, illustrating a studied phenomenon at its best.

In Picture 1, a form, enabling operating of base categories and introducing criteria of evaluation of productivity factors in an accepted scale, was shown.



Picture 1. Criteria of productivity improvement
Source: author's own study.

For evaluation of productivity, indicative analysis was used parallel. From the palette of possible to calculate factors, it is necessary to choose those which show productivity in a given research area the best.

Productivity expressed as measures in the form of a quotient, where in a numerator there is any productive effect (number of goods produced and

delivered to a recipient, value of sold production, produced added value, etc.) and in a denominator – a size of used or worn out resources in order to achieve this effect (for example, effective time of machine work, production quantity, etc.).

For supporting analysis and diagnosis of studied factors of productivity improvement in companies, a spreadsheet, casually named as "productivity cockpit", can be used.

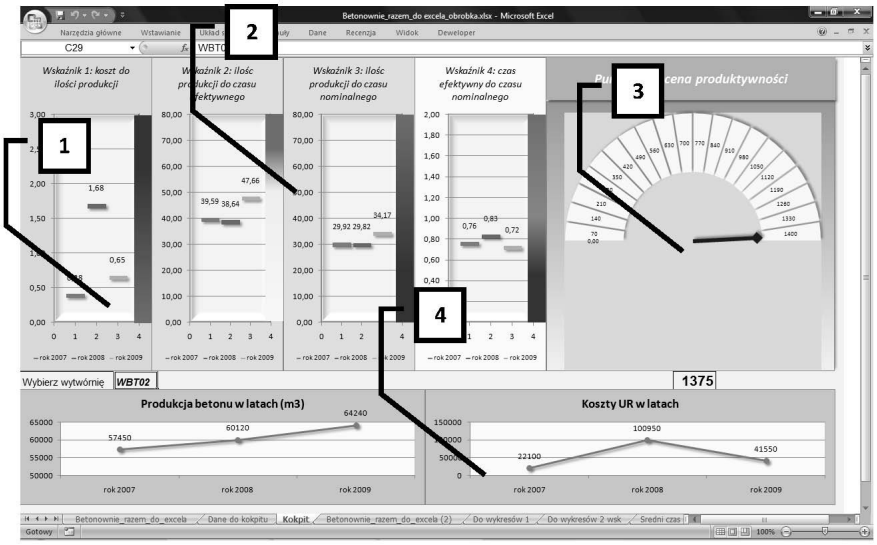
The spreadsheet allows for monitoring of a process of achieving productivity level in any chosen 3-year time compartments and to show it on the background of point evaluation of productivity referring to the last year of functioning.

In the spreadsheet, graphs showing a change of selected productivity indicators were collected. The graphs were designed in such a way as to make visual estimation of an indicator condition on the background of values recognized as bad (red), relatively good (yellow), good (green) possible.

On the right side in a "cockpit", disc graph was placed showing values of achieved point according to an accepted method. The graph is calibrated up to maximum values achieved in this study:

– graph showing the size of production in some years (3 years),
– graph showing suitably costs of maintenance management in some years.

Its construction was designed in such a way as to collect, on one picture, the most important summary results and all other data allowing for evaluation if the applied method performs well in economic practice.



Picture 2. Productivity cockpit
Source: author's own study.

Four vertical measures showing productivity indicators are designed in such a way as to let individual colors show (1) values in subsequent years 2007, 2008 and 2009. They were marked by colors: blue, red and green. Along the scale (vertical axis) colored strips were placed (2), formatted to show the dependence of color to evaluation of indicator value. The color of a strip changes from red through yellow to green Red shade of a strip indicates that indicator values are bad, yellow – average, whereas green indicates good values. Such data visualization is to make fast localization of indicators easy in areas not demanding activities (good) or demanding interest or intervention (average or bad).

The discussed measurement and productivity analysis shows where to look for improvement possibilities in organization and how this improvement is done. The response to these studies should be an effective plan of productivity improvement of companies with the lowest number of points.

In economic practice different methods of productivity evaluation are used, usually they are based on multi-indicative models combined with application of profitability indicators , often too complicated to use them in a company.

The described method refers to productivity problems in a different way than financial and allows for monitoring the quality of organizational activities and a real condition in this range. It was possible now to work out a method of direct measurement of productivity for maintenance management in building-construction companies, presented in this work in a form of a "Productivity Cockpit". So far, productivity has been calculated only on the basis of historical data from accepted periods of measurement (a month, quarter, year) within the number of manufactured product and the costs, without possibility of influence on achieved results. Productivity cockpit can consist a tool to steer production in industrial companies.

Improper strategy and organization system of maintenance management not only in building enterprises but also in other firms, can consequently result in accelerated processes of wear and tear and unexpected natural damages (breakdown), and production of vague quality can lead to huge loss.

Productivity improvement is a fundamental duty of company managerial staff as they are responsible for economic results. Due to the fact, that productivity calculation mainly plays the role of a diagnostic tool, its natural complement is a productivity improvement strategy (PIS). Its aim is to find ways of elimination of unnecessary costs and rationalization activities.

Strategy of productivity improvement is generally directed to rational usage of productive factors, both by organizational changes and personal and technical-productive ones. Productivity calculation plays the fundamental role for PIS study, as it provides indispensible analytical information to managerial staff of a company, it transfers a result of diagnostic researches and improvements designs as well.

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THE COMPETENCES OF COMMAND CADRE OF THE AIRPORT FIRE SERVICE ON THE EXAMPLE OF SAFETY ASSURANCE OF WARSAW OKĘCIE AIRPORT

Abstract

The globalization process in almost all spheres of our life causes a possibility of making equal living standards in all countries of the world. An introduction to globalization was undoubtedly the development of air transport which greatly accelerated the possibility of travelling on all continents. Along with the development of technology, airplanes used for carrying people and cargo become much better, quicker, but they also become more and more complicated in respect of their construction. This also gives rise to requirements that airports have to comply with, i.e. in order to receive super modern machines they must be equipped with modern navigational facilities, modern equipment for surface handling of airplanes and passengers. This, in turn, requires a continuous development of knowledge and competence from airport staff to be flexible in the constantly modernized environment. In consideration of a rapid development of air transport, and consequently its increasing importance for the world economy countries face a problem how to assure the high quality of aviation services, its access for a man-in-the-street, and first of all safety in its broad meaning, which is a synonym of quality in air transport. Nowadays, this is the main problem in air transport which has priority before the comfort of a traveller. Safety in aviation is approached in two dimensions – prevention of occurrence events and removal of results of unforeseeable incidents, accidents or catastrophes. A special part in this area is performed by the airport rescue and firefighting service, commonly called the Airport Fire Service (AFS). The main requirement for airport rescuers set by the International Civil Aviation Organization (ICAO) is conducting rescue and firefighting operations in case of an aircraft or airport incident (disaster). In Poland the AFS is a structural unit of the airport organization and therefore, within the framework of its activity, it performs a wide range of other functions consequential from airport operations such as conducting protection operations (refuelling of an airplane with

passengers on board, assisting with hot works carried out on the airport premises), preventive activities (training of airport services, giving opinions on investment projects in the airport etc.). The performance of operations by the AFS depends on their command cadre and more specifically on the competence of this personnel. The specific nature of the AFS responsibility for safety on the airport causes that the manner of operations of this service has a characteristic feature, distinguishing it from other airport services.

In the AFS activity two modes of operations can be distinguished:

- *usual – during the so called everyday work, normal activities like in every organization, and*
- *alarm – during emergency situations such as fires, disasters, other rescue and firefighting incidents where a unit is involved.*

An approach to giving orders and instructions by the command cadre will be different according to the mode of AFS operations. This requires suitable predispositions which should be characteristic of the AFS command cadres as well as high individual competences. Taking into account a number of factors such as the development of technology, engineering and management sciences which have an immediate impact on the development of air transport, a conclusion can be made that year by year higher competence requirements are established for airport rescuers, and one of the basic elements which can guarantee the fulfilment of the function they are qualified to perform is the proper organization and provision of specialist training.

1. Air transport

The twentieth century was characterized by a very quick development of technology, engineering, information technology, etc. of practically every sphere of a human life or activity. Two world wars had an immediate and significant impact not only on the development of military technology or medicinal sciences but also on economies of most countries all over the world, thus finally having a positive effect on the social situation of people. An extremely high progress was noticed in aviation, both in respect of construction and exploitation of aircraft as well as air transport supporting technology and engineering and in management systems and services of the air traffic. Over recent years air transport is the most rapidly developing branch of transport, one of the most important sectors of the world economy which generates significant profits. In addition to its positive effect on the development of world markets, air transport affects the progress of the globalization and integration process. This is especially visible on the European Union market where the flight market is substantially liberalized and integrated. The network of European airports includes approx. 370 airports, whereof 335 are situated in the territories of 15 former EEC countries.

Air transport is composed of many interrelated, mutually dependent elements. Therefore, it is often referred to as the air transport system. The most important components of this system are as follows:

- aerospace with an air route network,
- airports along with their infrastructure including radionavigation landing assistance systems,
- air navigation service providers,
- ground and satellite navigation devices,
- communications and supervisory devices and systems,
- users of aircraft,
- aircraft industry.

These components determine the features which are the characteristics of the air transport system:

- complexity resulting from a great number of components and interrelations;
- probabilism, i.e. unpredictability of all events happening in the air traffic management process (a definite probability of incidents),
- limited ability to make self-adjustments which means that when any faults occur in the system activity, the participation of the man is necessary to restore the system's efficient performance,
- dynamics and flexibility resulting from the interference of the man in the system operations in a definite time and space and from the possibility of adapting the system to new circumstances.

Important aspects of air transport are as follows:

- possibility of relocating quickly from one continent to another,
- comfort of travel,
- safety,
- price (accessibility),
- in the event of a disaster a large number of casualties,
- international nature of events,
- a definite location of an airport (most often near large concentrations of population),
- airline luggage restrictions,
- necessity to be punctual, time limits for departures / arrivals,
- necessity to surrender to rigours of airport security,
- susceptibility to weather conditions.

The complexity of the components of the air transport system, its features, characteristics of aircraft such as:

- ability to attain high flight speed and altitude,
- lack of possibility to stop an airplane in mid air,

- limitations regarding a change of a cruising speed,
- susceptibility to weather conditions and other effects of natural phenomena cause the necessity to create standards for all aspects of the system by introducing uniform rules, regulations and codes of practice as well as management and design procedures to assure safety and correct development of the system.

2. International civil aviation principles

Already during World War II some countries recognized the need for arranging the situation in international civil aviation. Therefore, in 1944 in Chicago they signed the Convention on International Civil Aviation which initiated an air traffic management process. The aim of the convention was to develop and support friendship and cooperation amongst nations to assure global safety and peace in the world. The countries which were the signatories to the Convention co-ordinated principles of international civil aviation, so that it could develop in a safe, orderly and fair manner for all nations and according to economic rules.

3. European civil aviation regulations

Having regard to the integration process, the European Union, basing on international regulations established by ICAO, developed a number of Directives and Regulations providing standards for the following areas of air transport in EU countries:

- market access,
- air traffic navigation,
- air traffic safety,
- protection of aviation,
- social matters,
- protection of passenger rights,
- trans-European transport network,
- environmental protection,
- external relations,

and other problems.

In compliance with the provisions of the Chicago Convention, on the basis of international standards every Member State should publish regulations, rules and laws applicable on its territory. With regard to the foregoing in Poland the Aviation Law Act was published in 2002 which governs legal relationships in respect of civil aviation in Poland. Civil aviation includes all air traffic with the

exception of state aviation, i.e. any state aircraft and state airports used exclusively for takeoffs and landings of state airplanes.

Amongst other things, the Aviation Law Act set forth standard requirements for the following issues:

- control in aerospace,
- civil aviation administration,
- aircraft and other air equipment,
- airports, landing grounds and airport ground equipment,
- air traffic personnel,
- air navigation,
- exploitation of aircraft,
- aviation economic activity,
- protection of civil aviation,
- air carriage,
- protection of passengers,
- third party liability in aviation,
- fines for violation of duties or conditions under aviation regulations,
- penal provisions for any breach of aviation regulations.

The Act liberalized the air flight market in Poland which so far had been a national domain and thereby it made it possible to provide a broader access to enterprises to render air transport services. Simultaneously, in order to assure specific safety standards, in pursuance of international regulations, enterprises operating in the air service sector were imposed upon very high requirements to comply with as a condition for their existence on the market. As from the effective date of the Act the economic activity including such objects as airport management may be carried out by a company possessing an airport management licence. The public airport management licence authorizes its holder to provide services related to takeoffs, landings and stops of aircraft, performed in the interest of air carriers and other users of aircraft.

It is also indispensable to obtain a licence for the ground handling of aircraft, cargo, passengers and their baggage. The ground handling includes the following categories of services provided in the airport in the interest of air carriers using an airport:

1) general administrative and economic services performed in the interest of users,
2) passenger service,
3) luggage handling,
4) air cargo (commodities and mail) handling,
5) ramp service of aircraft,
6) cabin service of aircraft,

7) services including refuelling and provision of lubricants and other technical materials,
8) aircraft technical and administrative services,
9) field operation and administrative service for crews of aircraft,
10) surface transport connecting an airplane and a terminal,
11) catering and provision of other supplies and in-flight services.

4. Safety of air traffic on airports in Poland

An airport can be founded provided that a licence is granted by the President of the Civil Aviation Office and it can commence its operations upon being entered in the register of civil airports.

Aircraft and air carriers have the right to use public airports under the principle of equality. The conditions of use of public airports and access fees for such use can be diverse only for kinds and characteristics of aircraft and the nature of performance of flight operations.

To provide the airport safety assurance system in accordance with the law the airport management has the following obligations:

1) use an airport in compliance with its purpose,
2) exploit the airport ensuring safety of flights and efficiency in the provision of service to users of the airport,
3) keep the airport and its components in the condition complying with technical requirements specified by a competent authority and in conformity with particulars in the register of civil airports,
4) determine the border of the flight area of the airport subject to the approval by the President of the Office,
5) ensure necessary medical aid at the airport,
6) make information contained in the airport operating instructions available to users of the airport,
7) ensure the conditions to airport administration authorities carrying their official duties necessary to perform such duties,
8) make available to the President of the Office, irrespective of other duties, information necessary to keep records of air traffic data, volume of passenger traffic and air cargo carriage, in compliance with the classification set forth in the Regulation No. 437/2003/EC of 27 February 2003 on statistical returns in respect of the carriage of passengers, freight and mail by air (Official Journal L 066 of 11.03.2003),
9) notify immediately the President of the Office and institutions providing air navigation service personnel of issuing an order to close the airport for air traffic or to introduce reasonable restrictions on its use, reasons for closing the airport and expected duration,

10) organize airport rescue and firefighting services,
11) coordinate works of a local airport safety team,
12) ensure the delivery of meteorological information for the needs of airport users.

5. Airport rescue and firefighting system

To ensure safety of flight operations on airports the airport administration is obliged to organize and maintain a rescue and firefighting system on airports within the framework of the national rescue system including the following actions:

1) develop an action plan for emergency situations,
2) prepare airport fire safety instructions in accordance with international regulations including the specification of action procedures in case of fire or another local emergency situation, agreed with the local competent commander of the National Fire Service,
3) organize and assure operations of the rescue and firefighting service equipped with specialist equipment,
4) maintain necessary rescue and firefighting resources.

Health care system, public administration, National Fire Service units and other public services cooperate to prepare and implement action plans for emergency situations and they report to the airport administrator in respect of coordination of activities.

The airport rescue and firefighting service is a firefighting unit within the meaning of the Fire Protection and Prevention Act of 24 August 1991. Employees of the airport rescue and firefighting service undergo specialist training provided at the expense of the airport administration.

The fire protection and prevention consists in the realization of activities aiming at the protection of life, health, property or environment against a fire, natural disaster or another emergency situation by:

1) preventing the occurrence and spreading of a fire, natural disaster or another emergency situation,
2) providing forces and resources to fight a fire, natural disaster or another emergency situation,
3) organizing rescue activities.

In compliance with the Fire Protection and Prevention Act in force a natural person, a corporate body, an organization or an institution using the environment, a building, an object or premises are obliged to protect it against the risk of fire or another emergency situation. Relevant provisions govern liability for any breach of fire protection and prevention regulations.

The owner of a building, civil structure or premises who assures fire protection has the following obligations:

1) to comply with civil structural, design, installation and technological fire protection requirements,
2) to provide a building, civil structure or premises with required fire detection systems and extinguishing equipment,
3) to assure maintenance and repairs of fire detection systems and extinguishing equipment so that their efficient and unfailing operations would be guaranteed,
4) to make sure that any persons in a building, civil structure or premises are safe and they will have a possibility of evacuation,
5) to prepare a building, civil structure or premises for rescue activities,
6) to acquaint workers with fire regulations,
7) to agree procedures in case of a fire, natural disaster or another emergency situation.

All or partial responsibility for the realization of fire protection and prevention duties is assumed by a manager or user of a building, civil structure or premises in accordance with a civil law contract establishing the management or use. If no such contract is executed, responsibility for the realization of fire protection and prevention duties will be imposed on an actual holder of a building, civil structure or premises.

The obligation to comply with fire protection and prevention requirements also rests on the manufacturer of machinery, devices and other products, as well as on buyers of foreign licences or imported machines, devices and other products and on the user of machinery, devices and other products.

Fire protection and prevention practices and conditions regarding buildings, other civil structures and premises are set forth in applicable regulations which provide for:

1) prohibited actions in structures and adjacent premises because of a possibility of causing or spreading a fire or a probable occurrence of difficulties in rescue activities or evacuations,
2) procedure for performance of duties by owners, administrators or users of buildings, other civil structures and premises in respect of fire protection and prevention,
3) procedure for usage or storage of hazardous materials,
4) suitable conditions of evacuation and conditions where using an existing building is deemed as threatening to human life,
5) conformity requirements for water supply and firefighting installations,
6) the range of obligatory usage of fixed firefighting equipment, fire alarm systems including alarm signalling devices and alarm systems, audio warning devices and fire extinguishers in civil structures,

7) conformity requirements for technical installations and equipment in civil structures,
8) procedures for organizing fire hazardous works and an assessment of explosion risks,
9) procedures for fire protection of forests,
10) procedure for fire protection of combustible crops of agricultural products, their transport and storage.

Fire protection service units include:
1) National Fire Service structural units,
2) Military Fire Service structural units,
3) company fire brigade;
4) company emergency service,
5) district professional fire brigade,
6) county professional fire brigade,
7) local emergency service,
8) voluntary fire brigade,
9) association of voluntary fire brigades,
10) other rescue units.

Fire protection service units are established as uniformed services and equipped with specialist equipment, intended to fight fires, natural disasters or deal with other local emergency situations. Workers employed in these units have special duties resulting from the nature of their work and they should have suitable qualifications and satisfy psychophysical conditions. They are referred to as 'firefighters from fire protection units'. Employees who have required qualifications to become a firefighter, firefighting technician, firefighting engineer or an individual whose qualifications to practise these regulated trades are recognized as a result of the procedure for obtaining recognition of qualifications acquired in the Member States of the European Union, the parties to the European Free Trade Agreement (EFTA), the signatories to the European Economic Area Agreement or the Swiss Confederation can become firefighters from a fire protection unit provided that they carry out rescue activities.

Qualifications required to pursue a firefighter career include having general education, at least at the secondary level and the completion of a basic training course or a basic and supplementary training course. Firefighters from fire protection units should possess physical and psychological abilities to work in these units. An assessment of prospective firefighter's physical and psychological ability to work is carried out by an occupational medicine specialist.

ICAO defined a basic task of the rescue and firefighting service (including the Airport Fire Service – AFS) as saving a human life. In case of an accident or incident it is of significant importance for saving a human life to use reasonable

precautions on the airport. The most important factors upon which efficiency of rescue activities depends include as follows:

- personnel training,
- very good equipment efficiency and condition,
- the time which must elapse until the personnel begins a rescue activity and firefighting equipment is used.

The AFS must be equipped with suitable rescue and firefighting equipment and it should have such an organizational structure that would facilitate undertaking interventions in emergency situations including but not limited to the following:

- an air accident in the airport operations area,
- an air accident outside the airport operations area,
- if there is a reasonable threat that an air accident would happen in the airport operations area,
- when the aircraft which happened to be within the airport operations area was damaged or a technical failure took place.

The airport administration must assure:

- airport rescue and firefighting vehicles in compliance with required parameters,
- emergency equipment which should be transported on rescue and firefighting vehicles.

International requirements for assurance of safety standards of airport operations determine the manner of organization and kinds of processes which must be implemented by the AFS to carry out its mission. These units in general are organized like the National Fire Service units. There are three main areas of activity:

- basic, i.e. operating activities,
- support, i.e. activities assuring the technical efficiency of vehicles and rescue equipment,
- strategic, i.e. activities aimed at the development of a unit and provision of preventive activities on the airport premises.

The volume of air traffic on the aerodrome and types of airplanes performing flight operations determine the number of the ADS staff and the quantity of equipment on each airport. However, the structural organization and performance of tasks are convergent, and consequently, competences required from the command cadre and other personnel are almost identical for most civil airports. The structure of the command cadre with their basic tasks is shown in Fig. 1 below.

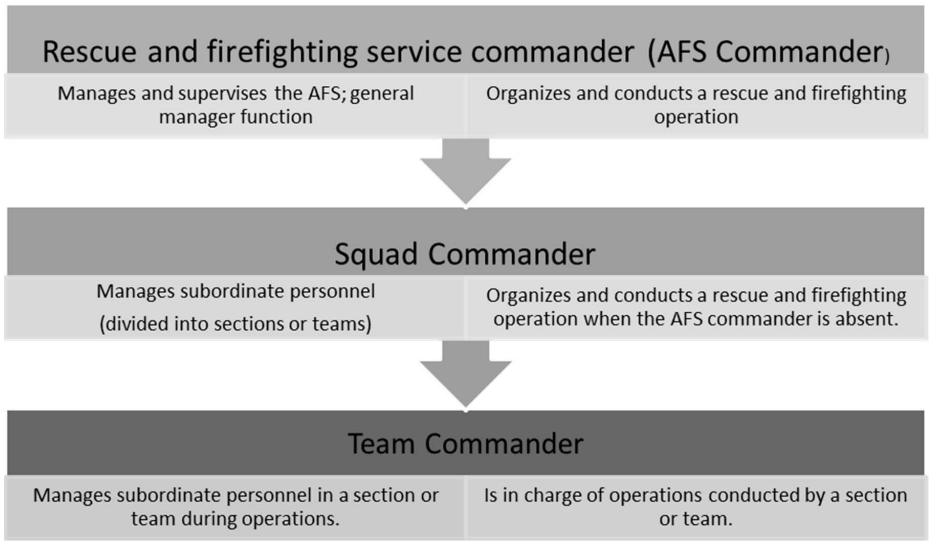

Fig. 1. The structure of the command cadre of the Airport Fire Service.
Source: author.

The above figure shows the reporting hierarchy in the AFS. The specific nature of the AFS mission and accordingly, a double nature of the human resource management requires that a flexible management system should be used by the command cadre to manage the subordinate staff. In the AFS activity two modes of operations can be distinguished:

- usual – during the so called everyday work, normal activities like in every organization, described by processes as shown in Fig. 2 and
- alarm – during emergency situations such as fires, disasters, other rescue and firefighting incidents where a unit is involved.

According to the AFS operating mode there will be a different approach to the manner of giving instructions. In the usual mode instructions are given to the staff in the standard manner like in every organization. A significant difference appears during rescue and firefighting activities and manoeuvres. In this case instructions are given as an order and feedback information is a report. The situation is the same as in the army during war operations. This form of communication requires a great discipline and the acceptance of a strict power structure in respect of the functions of the organization and a reporting hierarchy of the staff. The above management style and the communication procedure determines competences of the command cadre on particular levels of the official hierarchy. In the European Union key competences include knowledge, skills, abilities, attitudes, motivation, values, personality. Taking into account the

extensive nature of these problems only knowledge and skills are discussed in this paper. Fig 2 shows minimal requirements, which should be met by candidates for particular levels of the commanding staff in AFS.

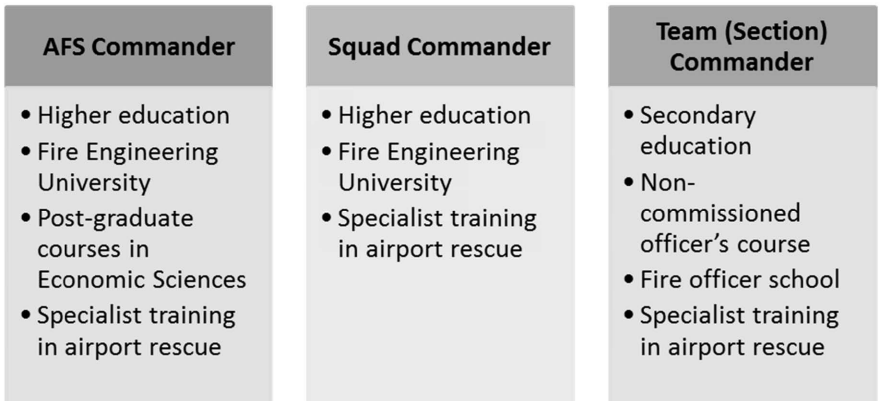

Fig. 2. Educational requirements for the command cadre of the Airport Fire Service
Source: author.

Specialist training in airport rescue consists of theoretical and practical instructions and it is provided once every 3 years. Practical instructions should be given on:

- training positions,
- training yards of exercises,
- a firefighting training ground / area,
- airport infrastructure objects.

Instructions can only be given by authorized personnel:

- specialists in aviation fire engineering, protection and prevention,
- National Fire Service officials,
- aircraft construction and exploitation specialists,
- and other aviation and rescue specialists.

The training is completed when a learner passes a theoretical and practical examination comprising modules which are the subject of the training. In addition to the training on the AFS premises the administrator is obliged to organize an in-service training system for AFS employees. This kind of training will include as follows:

- operational preparation of the airport including its topography,
- aircraft construction,
- personal safety of the rescue staff,
- communications, alarm, cooperation and commanding system,

- construction and exploitation of airport rescue equipment and vehicles,
- fire extinguishing media and tactics of its use,
- tactics of rescue activities,
- procedure for dealing with hazardous materials,
- provision of aid to victims under outpatient conditions,
- cooperation of airport services with external entities during rescue activities in the airport operations area.

Upon completion of the specialist training AFS rescuers gain knowledge of the following:

- obligatory rules during takeoff and landing operations of the aircraft, airport surface traffic of vehicles,
- directions of landings and takeoffs of aircraft, taxiways, rapid exit taxiways, final approach and takeoff area,
- rules of safe and quick access to the place of an air accident or incident,
- construction of fixed wing aircraft and a helicopter with special regard to the distribution of hazardous materials, ways and possibilities of evacuation of passengers and crews,
- fire prevention and counteractions to other hazards occurring on the airport premises,
- construction, tactical and technical parameters, operating and usage instructions regarding the equipment supplied for AFS,
- fire extinguishing media and neutralizers and instructions of their usage,
- functions and rules of commanding a squad, team and section,
- combustion process and fire spreading mechanisms in aircraft,
- fire extinguishing methods and procedure for aircraft and other airport facilities,
- tactics of rescue activities during various events and under various weather and field conditions,
- organization of the command and control communication system and cooperation,
- procedure for dealing with hazardous materials,
- provision of aid to victims of accidents and incidents under outpatient conditions,
- occupational safety and health in fire lookout towers, during theoretical and practical instructions, manoeuvres and rescue activities.

The training is deemed to be effective when rescuers who have completed it successfully have the following skills:

- proper handling of the equipment used by AFS,
- optimum utilization of technical and operating parameters of the equipment,
- conducting reconnaissance under various conditions and during various events,
- commanding a squad, team and section,

- organization and use of the command and control communication system and cooperation,
- organization and conducting evacuation and rescuing people and property during aviation accidents and incidents,
- giving operation orders,
- correct reporting on the development of the situation and the course of rescue activities,
- effective selection of fire extinguishing media and correct use of fire extinguishing streams,
- proper calculation of forces and requisite resources to conduct a rescue and firefighting operation,
- in-service training of the subordinate staff,
- ability to assess the technical condition of the equipment given for use,
- provision of first aid to victims under outpatient conditions,
- use of rules of occupational safety and health in fire lookout towers, during theoretical and practical instructions, manoeuvres and rescue activities,
- fire extinguishing tactics for airport facilities,
- assessment of possible fire development,
- efficient conduct of technical, chemical and ecological rescue operations.

The requirements regarding the basic (statutory) function of the AFS in the field of safety assurance on the airport are presented below. Taking into account that an AFS unit is an airport organizational unit it has a number of other duties set forth in the Organizational Regulations of every airport which have an indirect effect on the safety of flight operations on the airport. Fig. 3 shows a diagram of connections between AFS processes with the areas of airport operations.

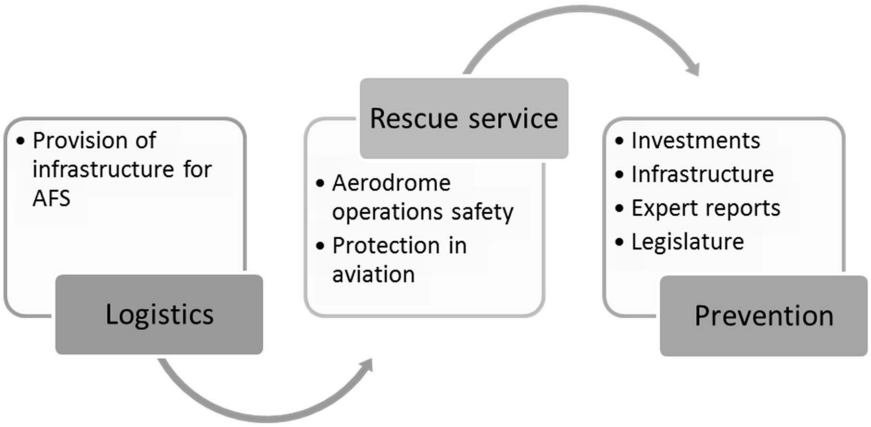

Fig. 3. Airport Fire Service processes
Source: author.

In the AFS the following three basic processes can be identified:

1. Rescue service – the main process which underlies AFS operations and results from the statutes of the airport, is an international requirement for every airport; in Poland it is provided by the AFS as units in the organizational structure of an airport.
2. Prevention – the main process, which takes place in the AFS according to the Organizational Regulations of any airport, can be provided by external institutions and organizations e.g. the National Fire Service.
3. Logistics – the supporting process aimed at assuring the efficiency of rescue equipment can be provided by external institutions and organizations.

Legal requirements establish strict standards for the AFS in the area of rescue as described above. In other areas of airport operations which are protected within the framework of the implementation of Prevention and Logistics processes the definite requirements are set forth partly in national general regulations (e.g. The Building Law), partly in airport specific standards, i.e. procedures, instructions, plans and programmes of a given airport.

Within the framework of airport operations the airport management authorities require from the AFS command cadre a lot of additional activities affecting safety, however rescue is always the priority. Activities conducted as tasks of the command cadre also include as follows:

- Coordinating development and application of the Airport Rescue Operations Plan,
- Requesting for the suspension of works in airport facilities in case of a fire risk,
- Participation in the civil defence preparation,
- Participation in fire and accident investigations; analysis of causes and circumstances of fires on the airport premises,
- Inspection of airport facilities in respect of compliance with firefighting regulations and orders of the airport management authorities,
- Organization and conducting of airport manoeuvres with the participation of all interested services of the airport and external organizations described in the Airport Rescue Operations Plan and trainings checking the organization and conditions of evacuation in facilities,
- Hot work precautions where hazardous works are carried out on the airport premises,
- Removal and neutralization of fuel leaks and other petroleum derivative substances causing a fire risk,
- Providing assistance in refuelling of airplanes with passengers on board,
- Providing first medical aid to victims at the place of occurrence of an accident or incident until they are taken by medical staff members of health care units,

- Supervision over the correct performance of operations and maintenance of fire equipment installed on the airport ground premises,
- Providing fire safety training to the airport service staff,
- Development of drafts of internal rules, regulations, procedures and instructions regarding airport rescue services,
- Giving opinions on each stage of the design documentation with regard to investments, modernizations and repairs in terms of fire safety,
- Participation in the final site acceptance test of facilities upon completion of investment and repair processes with regard to fire safety,
- Preparing opinions and expert reports on airport rescue services,
- Coordinating works at the development of programs and plans regarding fire safety.

6. Conclusions

1. International guidelines and national regulations set forth the basic area of AFS operations. i.e. today an airport employee who represents the AFS command cadre should have a very broad knowledge. Although legal requirements emphasize the operating preparation to perform the function of an airport rescuer, they do not provide for standard requirements in everyday work of a unit. As it was described above, AFS operations take place both in the usual mode and in the alarm mode. Therefore, operations of rescuers are different. Specialist instructions concentrate on the proper performance of duties by a rescuer, i.e. the performance of statutory obligations of an airport. In practice, the problem of performance of a managerial role by members of the command cadre is disregarded. Training in personnel management is provided as part of general instructions for workers and airport management staff. Such training sessions are generally useful, however during instructions no attention is paid to the specific nature of work in a uniformed unit where part of operations is based on an order. This results in considerable differences in the manner of communication both in the vertical structure and the horizontal structure of particular commanding levels. Within a second a friend rescuer becomes a commander who does not discuss any matters but gives an order and demands absolute obedience and execution. Such situations can give rise to instinct objections or even become the cause of conflicts. Therefore, in the case of the command cadre, in addition to knowledge, education, decision making skills, experience and other skills, the possession of suitable psychological features will be useful. Self-confidence and the ability to assume responsibility and good communication skills will certainly be required. The present programmes of specialist training focus mainly on the communication during incidents, its form and

flow of information. The stress on communication as a complex process intended not only to give orders and instructions but also to build relations among people, in particular confidence and respect underlying cooperation as the AFS operations concept is insufficient.

2. Another problem which should be included in specialist training because it affects safety on the airport is a good knowledge of English as the international communication language in aviation and improvement of English language skills. Once every three years the members of the AFS command cadre participate in training in airport rescue in the International Fire Training Centre at Teesside in Great Britain or in the Airport Rescue Training Centre at Leipzig. Courses are held in English and they refer to:
   - Training for firemen
   - Training for the command cadre and
   - Training for instructors teaching in rescue units.
3. A problem regarding the improvement of the competence of the AFS command cadre may refer to the scope of specialist instruction which was in detail set forth in the Minister of Infrastructure Regulation of 12 September 2005 on the preparation of airports to emergency situations and airport rescue and firefighting services. The Regulation provides for a detailed syllabus including total obligatory hours of theoretical and practical instruction as well as topics and modules with a range of knowledge they should contain. This is the reason why the training programme is inflexible and it is impossible to introduce and discuss any additional issues which arise instantly. It would be more useful to provide general guidelines and training framework whereas any details would be approved on a yearly basis, for example, by the airport administration in accordance with the opinion given by the Chief Fire Officer of the Fire Brigade.

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SELECTED LEGAL ASPECTS OF MANAGEMENT CONTRACTS

Abstract

Management contracts appeared as a form of an enterprise management when the era of market economy had dawned. The issues of management contracts are complex and multidimensional because they include economic, social, and legal aspects. The discussion below concerns selected legal aspects of management contracts which remain at the focus of the interest of private as well as public law. In order to determine the legal character of such contracts, the provisions of the Civil Code were analysed, in particular the freedom to contract, as well as the provisions of the Labour Code within the area of the employment relationship characteristics and taking judgements of the Supreme Court into account. Ultimately, the legal nature of a given management contract depends on the circumstances in a given case. The analysed selected provisions of detailed acts which the legislator regulated management contracts with indicate that these contracts are civil law contracts. From the standpoint of public law, in particular tax law, this decides about the manner of the settlement of income from such contracts with tax authorities. Natural persons providing services in person based on agreements concerning the management of an enterprise, management contracts, or similar agreements are or are not VAT payers depending on the legal relationship within which they provide these services.

Management contracts are examples of non-regulated agreements with an established position in economic practice. The discourse on management contracts may be held from many points of view. The comments presented here refer to selected legal bases and conditions of management contracts. Firstly, the legal nature of such contracts is still not determined and depends on the circumstances in a given case. Secondly, some guidelines concerning the nature of management contracts may be sought in provisions of detailed acts with which the legislator regulated agreements concerning the management. Thirdly, it may

not be omitted that the assumed nature of the contract will influence the manner of the settlement of income from a management contract with tax authorities.

I.

The principle of the freedom to contract (art. 353^1 of the Civil Code) indicates that parties may shape their legal relationship at their discretion as long as the contents or purpose thereof are not contrary to the properties (nature) of the relationship itself, the act, and the principles of social coexistence.

The freedom to determine the contents of a contractual relationship consists in the freedom to do so in contractual relationships in various types of regulated agreements as well in contractual relationships which are not included in the catalogue of regulated agreements and relationships combining elements of various regulated agreements.[1]

Non-regulated agreements are governed with general provisions of the civil law concerning agreements, relevant provisions of the general part of the law of obligations, and, if required, provisions on regulated agreements applied by analogy or directly, depending on the purpose of the analysed agreement and the similarity of such purpose with the purposes of regulated agreements.[2]

Parties may choose the type of the legal relationship which will be binding for them. This also includes the permanent performance of specified activities for remuneration, i.e. the legal relationship specified as work in the wide meaning of this expression. Work may be based on a civil law relationship (mandate contracts, management contracts) or employment relationship. The selection of the type of legal relationship has legal consequences not only for the contents thereof but also for many other areas (tax, law etc.).

The position that the principle of the freedom to contract is limited in the labour law for the benefit of the employee seems still valid. This results from the assumption that the employee is a weaker party to the employment relationship (in particular, in the economic and social aspect). Therefore, appropriate application, through art. 300 of the Labour Code, of the art. 353^1 of the Civil Code, which contains the provision for creating and shaping a theoretically unlimited number of obligation relationships between equal contractors to the employment relationship, should take into account this non-equality of real situations of the employer and the employee.

The principle of a privileged position of the employee was formulated *expressis verbis* in art. 18 (1) of the Labour Code, under which provisions of

[1] M. Safjan (in:), *Kodeks cywilny*. Tom I. Komentarz, ed. K. Pietrzykowski, Warsaw 2002, p. 664.

[2] W. Czachórski (ed.), A. Brzozowski, M. Safjan, E. Skowrońska-Bocian, *Zobowiązania*. Zarys wykładu, Warsaw 2002, p. 133.

employment contracts and other acts based on which an employment relationship is formed may not be less beneficial for the employee than the provisions of the labour law. Therefore, it may be concluded that a contract may specify a more beneficial work relationship than the provisions of the labour law. Pursuant to art. 18 (2) of the Labour Code, the provisions of an employment contract which are less beneficial for the employee are invalid; they are replaced with applicable provisions of the labour law.

In its judicature, the Supreme Court referred to the literature, where it is assumed that the essence of the management contract consists in the fact that a manager undertakes to run an enterprise of the other party at that party's account and risk and he runs this enterprise on his behalf or on behalf of another party. The characteristics of management contracts emphasize independence of the manager and the purpose of the contract, i.e. the transfer of the activities consisting in running an enterprise to the manager with granting him independence in running the enterprise. Another property of management contracts is the expectation that the manager contribute his own intangible assets, e.g. a new manner of managing the enterprise, his professional experience, commercial and organizational expertise, reputation, clients, established trade relationships, and his image. In this approach, management contracts are only civil law contracts.[3]

The Supreme Court dealt with the nature of management contracts many times. Assuming that the bases for establishing an employment relationship include the employment contract (art. 25 of the Labour Code), nomination (art. 68 of the Labour Code), selection (art. 73 of the Labour Code), appointment (art. 76 of the Labour Code), or cooperative employment contract (art. 77 of the Labour Code), it may be concluded that, since this list does not include management contracts, it means that management contracts are a type of civil law agreements, regulated (such as service agreements, mandate contracts or contracts to perform a specific task) or non-regulated ones. This does not exclude the possibility of managing a work establishment by an employee based upon an employment contract including the elements of an employment relationship specified in art. 22 of the Labour Code.[4]

By establishing an employment relationship, the employee undertakes to perform a specific work for the employer and under the employer's management, in the place and time specified by the employer, while the employer undertakes to employ the employee for a remuneration (art. 22 (1) of the Labour Code).

[3] Judgement of the Supreme Court of April 4, 2002 I PKN 776/00, OSN ZU IPUSiSP 2004, No. 6, item 94.

[4] Judgement of October 11, 2005 I PK 42/05, OSN ZU IPUSiSP 2005, No. 17-18, item 267.

Work on the conditions specified in this provision is based on the employment relationship, regardless from the name of the agreement concluded by the parties (art. 22 (1^1) of the Labour Code).

What results from art. 22 (1^1) of the Labour Code is the fact that a civil law agreement based upon which work is performed will be treated as an employment contract if the premises under art. 22 (1) of the Labour Code are met. On the other hand, an employment contract based upon which work is not performed upon the conditions specified in art. 22 (1) of the Labour Code will be treated as a different agreement.

If the contents of the legal relationship between the parties (judged not only by the contents of the contract but, most of all, the manner of performance thereof) are dominated by properties characteristic for the employment relationship specified in art. 22 (1) of the Labour Code (the performance of specific work for remuneration, for the employer and under the employer's management, in the time and place specified by the employer), this is work based on the employment relationship, regardless from the name of the contract concluded by the parties (art. 22 (11) of the Labour Code). On the other hand, if the contents of the employment relationship are not dominated by the properties characteristic from the employment relationship, it may not be assumed that the parties are bound with such a legal relationship.[5]

In the opinion of the Supreme Court, the contract under which work is performed may not be mixed and may not combine elements of an employment contract and a civil law contract.[6]

Repeatedly, the Supreme Court indicated that a lot of circumstances should be taken into account in order to assess whether a relationship is the employment relationship, including but not limited to the following:

1. the intention of the parties, including the intention expressed in the title of the agreement,[7]

[5] Judgement of November 25, 2004 I PK 42/04 , OSN ZU IPUSiSP 2005, No. 14, item 209; cf. judgements of the Supreme Court of December 22, 1998, I PKN 517/98, OSNAPiUS 2000, No. 4, item 138; of January 12, 1999, I PKN 535/98, OSNAPiUS 2000, No. 5, item 175; of February 9, 1999, I PKN 562/98, OSNAPiUS 2000, No. 6, item 223; of April 7, 1999, I PKN 642/98, OSNAPiUS 2000, No. 11, item 417.

[6] Judgement of the Supreme Court of January 23, 2002, I PKN 786/00, OSNP 2004, No. 2, item 30.

[7] Cf. the judgement of March 4, 1999, I PKN 616/98, OSNAPiUS 2000, No. 8, item 312; the judgement of April 7, 1999, I PKN 642/98, OSNAPiUS 2000, No. 11, item 417; the judgement of December 9, 1999, I PKN 432/99, OSNAPiUS 2001, No. 9, item 310; the judgement of December 5, 2000, I PKN 127/00, OSNAPiUS 2002, No. 15, item 356.

2. the obligation to perform work in person; the prohibition to make the third party perform the work instead,[8]
3. the absolute principle of remuneration,[9]
4. the employee's obligation of due diligence rather than reaching the goal; the placing of the risk of operation on the employer,[10]
5. performance of cooperated team work,[11]
6. permanent performance of work,[12]
7. specific principles of operation of the employing entity,[13]
8. certain characteristics of the employment relationship, e.g. the payment of remuneration for overtime,[14]
9. the payment of the sickness benefit and the use of benefits from social insurance,[15]
10. the performance of work when summoned by the employer in order to replace absent employees,[16]
11. performance of subordinate work.[17]

The performance of subordinate work is a property which isolates the employment relationship out of other legal relationships. The Supreme Court specified the elements of the employment relationship which indicated that work is subordinate:

[8] Cf. the judgement of December 4, 1997 r., I PKN 394/97, OSNAPiUS 1998, No. 20, item 595; the judgement of December 2, 1998, I PKN 458/98, OSNAPiUS 2000, No. 3, item 94; the judgement of October 6, 1998, I PKN 389/98, OSNAPiUS 1999, No. 22, item 718; the judgement of October 28, 1998, I PKN 416/98, OSNAPiUS 1999, No. 24, item 775.

[9] Cf. the judgement of December 5, 2000, I PKN 133/00, OSNAPiUS 2002, No. 14, item 326.

[10] Cf. the judgement of the Appeals Court in Rzeszów of December 21, 1993, llI AUr 357/93, OSA 1994, No. 6, item 49.

[11] Cf. the judgement of November 5, 1998, I PKN 415/98, OSNAPiUS 1999, No. 24, item 780; the judgement of December 22, 1998 r., I PKN 517/98, OSNAPiUS 2000, No. 4, item 138.

[12] Cf. the judgement of December 14, 1999, I PKN 451/99, OSNAPiUS 2001, No. 10, item 337.

[13] Cf. the judgement of October 15, 1999, I PKN 307/99, OSNAPiUS 2001, No. 7, item 214.

[14] Cf. the judgement of December 4, 1998, I PKN 484/98, OSNAPiUS 2000, No. 2, item 62.

[15] Cf. the judgement of January 12, 1999, I PKN 535/98, OSNAPiUS 2000, No. 5, item 175; the judgement of February 14, 2001 r., I PKN 256/00, OSNAPiUS 2002, No. 23, item 564.

[16] Cf. the judgement of June 28, 2001, I PKN 498/00, OSNP 2003, No. 9, item 222.

[17] Cf. the judgement of March 20, 1965, III PU 28/64, OSNCP 1965, No. 9, item 157.

1. the specified time of work and place of performing the activities,[18]
2. the signing of the attendance register,[19]
3. the following by the employee of the work regulations and the superiors' instructions concerning the place, time, and manner of the performance of work; the obligation to observe the work standards,[20]
4. the obligation to follow the instructions of the superiors,[21]
5. the performance of shift work; permanent availability of the employee,[22]
6. the precise determination of the place and time for the completion of the assigned task and the performance of tasks under the supervision of a manager.[23]

However, these are the properties of an "ordinary" employment relationship. Doubtless, the specificity of the employment relationship of the person managing an establishment on behalf of the employer is different. However, this does not mean that this person may not be employed based on the employment relationship, what is confirmed with many provisions of the Labour Code, e.g.:
art. 128 (2) (2) – employees managing an employing establishment on behalf of the employer should be understood as employees managing the employing establishment in person and their deputies or employees being members of a collective body managing the employing establishment and chief accountants,
art. 131 (2) – the limitation of a week's working time (48h in the adopted settlement period) does not concern employees managing an employing establishment on behalf of the employer,
art. 149 (2) – working hours of employees managing an employing establishment on behalf of the employer are not registered,
art. 151^4 (1) – if necessary, employees managing an employing establishment on behalf of the employer perform work outside their normal working hours with no right to the remuneration and bonus for overtime,
art. 241^{26} (2) – the labour agreement in an establishment may not specify the conditions of remuneration for employees managing the employment establishment on behalf of the employer and people managing the employment establishment upon the basis other than the employment relationship.

[18] The judgement of the Regional Labour and Social Insurance Court in Krakow of December 18, 1975, II U 2867/75, Służba Pracownicza 1976, No. 10, p. 28.
[19] The judgement of the Regional Labour and Social Insurance Court in Łódź of November 25, 1975, I P 848/75, Służba Pracownicza 1976, No. 4, p. 38.
[20] The judgment of February 27, 1979, II URN 19/79, Nowe Prawo 1981, No. 6, p. 82.
[21] The judgment of April 11, 1997, I PKN 89/97, OSNAPiUS 1998, No. 2, item 35.
[22] The judgment of September 11, 1997, II UKN 232/97, OSNAPiUS 1998, No. 13, item 407.
[23] The judgment of December 22, 1998, I PKN 517/98, OSNAPiUS 2000, No. 4, item 138.

The subordinate position of an employee managing an employing establishment on behalf of the employer is specific and may not be brought down to the characteristics listed above. Such an employee has no direct superiors who could supervise over his work and give him instructions; in general, he decides about the time and place of his work as well as about specific activities to be performed on his own. Therefore, a person managing an employing establishment on behalf of the employer may be employed based upon the employment relationship under which the performance of subordinate work is specific, different than in the "ordinary" employment relationship. In its judgement of September 7, 1999, the Supreme Court[24] decided that the subordination of an employee may consist in the determination, by the employer, of the time of work and tasks; however, the employee may decide freely, to a certain extent, about the manner of the performance of work, in particular when he does a creative job.[25]

What decides about the qualification of a legal relationship as an employment relationship is, most of all, the manner of performing work. The parties may make explicit declarations of intent concerning the shape of the new basis for employment. However, even without an explicit declaration of the parties' intent in this area, a civil law relationship may become an employment relationship if the parties start to perform it in the manner which is characteristic of an employment relationship.[26]

When determining the type of work and the management of an employing establishment, the parties may form the contents of the employment relationship in such a way that this relationship includes some characteristic elements which would make it different from the "ordinary" or "pure" employment relationship but which would still fit the convention of the employment relationship defined in art. 22 of the Labour Code.[27]

As results directly from art. 241^{26} (2) of the Labour Code, a person managing an employing establishment on behalf of the employer may be employed based upon the employment relationship or upon a different basis.

The need to meet the challenges of the economic life results in the liberalization and greater flexibility of employment forms. Therefore, in practice, various forms of employment are created; management contracts are one of them.

[24] The judgement of September 7, 1999, I PKN 277/99, OSNAPiUS 2001, No. 1, item 18.
[25] The judgement of April 4, 2002, I PKN 776/00, OSNP 2004, No. 6, item 94.
[26] The judgement of November 14, 1965, III PU 17/65, OSNCP 1966, No. 4, item 66.
[27] The judgement of October 11, 2005 I PK 42/05, OSN ZU IPUSiSP 2005, No. 17-18, item 267.

The qualification of a legal relationship as an employment contract or a civil law contract depends on the circumstances in a given case. Each form of employment of a manager, i.e. a civil law contract or an employment contract, has its advantages and drawbacks. The forming of a management contract as an employment contract provides a manager with guarantees of employment resulting from the labour law provisions; however, it is related with high costs of employment incurred by the employer, especially as the remuneration of a manager proportional to his personal potential and his scope of responsibilities may be very high. Civil law management contracts ensure great flexibility of employment and a possibility of the reduction of costs related to the employment of an employee. The fact that the legal relationship concerning the employment of a manager is subject to the freedom of contracting makes it possible to introduce many provisions to a contract, including but not limited to an unlimited working time of a manager, full responsibility for damage, and the exclusion of employee rights concerning minimum salary and annual leave. The employment based upon a civil law management contract is popular as a result of, in particular, high remuneration which often depends on work results, no subordination to a superior, and the possibility to fully use one's experience in management.

II.

The notion of the "management contract" (in Polish "*kontrakt menedżerski*" or sometimes "*kontrakt kierowniczy*") should, in general, be used for the basis of employment of people managing an employment establishment which is an economic entity, i.e. en enterprise, a company, or a cooperative, on behalf of the employer. It is a synonym of the agreement concerning management ("*umowa o zarządzanie*").[28]

Under an agreement concerning management, a manager is authorized by the owners of an enterprise (company) to take any legal and factual acts concerning the managed enterprise (what does not exclude the introduction of some limitations as to the manager's independence, e.g. concerning the possibilities of selling real properties owned by the enterprise or its technologies, making transactions resulting in obligations exceeding a certain amount etc.).[29]

In several acts, the legislator used the notion of "agreement concerning management". It concerns, in particular, the cases of managing public property, e.g. in the Act concerning state-owned enterprises, the Act concerning national

[28] The judgement of October 11, 2005 I PK 42/05, OSN ZU IPUSiSP 2005, No. 17-18, item 267.

[29] The judgement of the Supreme Court of April 4, 2002 I PKN 776/00, OSN ZU IPUSiSP 2004, No. 6, item 94.

investment funds, the Act concerning commercialization and privatization, and the Act concerning the management of agricultural real properties of the Treasury.

The Act of September 25, 1981 concerning state-owned enterprises[30] contains Chapter II titled Agreement concerning the management of an enterprise. The provisions indicate that the founding body may entrust a natural or legal person with the management of a state-owned enterprise (art. 45a (1)). The management may be entrusted to such a person on the initiative of the founding body, upon the consent of the employee council and the general meeting of the employees (delegates) of the enterprise or upon the consent of the general meeting of the employees (delegates) (art. 45a (2)). The management is entrusted based upon the agreement concluded for a specified period of time, at least three years, between the Treasury represented by the founding body and the manager (agreement concerning the management of an enterprise). The agreement concerning the management of an enterprise should specify, in particular, the following:

1) the obligations of the manager concerning the routine management, modifications and facilitations in the enterprise,
2) the principles of remuneration due to the manager, taking into account the provisions of the Act of March 3, 2000 concerning the remuneration of persons managing certain legal entities (*Dziennik Ustaw [the Polish Journal of Laws]*, No. 26, item 306 and of 2001, No. 85, item 924 and No. 154, item 1799),
3) the assessment criteria for management efficiency,
4) the responsibility for the entrusted enterprise.

If the manager is a legal person, the agreement should specify who will perform the management activities on its behalf. The manager, or the person acting on its behalf in the event described above, is authorized to make any declarations of intent on behalf of the managed enterprise. Upon the take-over of the obligations by the manager:

1) the employees' self-management bodies are dissolved by operation of law,
2) the founding body recalls the director of the enterprise,
3) the manager takes over the competences of the director and the employees' self-government, with the exception of the following:
   a. the right of objection against decisions of the founding body,
   b. accepting and approving of the financial statements,
   c. dividing the profit made by the enterprise into funds and specifying the principles of using these funds (art. 45b).

In the state-owned enterprise where the manager has taken his responsibilities, the founding body nominates a supervisory board pursuant to

[30] Act of September 25, 1981 concerning state-owned enterprises, i.e. *Dziennik Ustaw* of 2002, No. 112, item 981.

art. 59 and entrusts it with a constant supervision over the activities of the enterprise.

The founding body may immediately terminate the agreement concerning the management of an enterprise if:

1) the manager has grossly violated law in relations to the management of the enterprise,
2) the state-owned enterprise has failed to perform its tax obligations to the Treasury for at least 3 subsequent months,
3) the manager has significantly violated the provisions of the agreement concerning the management of an enterprise,
4) the circumstance specified in art. 37a (1) (4) (art. 45c) have arisen.

The Act of October 19, 1991 concerning the management of agricultural real properties of the Treasury[31] (*Dziennik Ustaw* 1995.57.299) indicates that the administration of the property of the Treasury consists in the management of a specific part of the Resource on behalf of the Agency, based upon an agreement, for remuneration, and for a specific term. An administrator may be a legal or natural person. The agreement between the administrator and the Agency should be concluded in writing and specify, in particular, the following:

1) the assets to be managed,
2) the principles of the administrator's remuneration, including the administrator's right to collect fruits or to receive a share in profit,
3) the responsibilities of the administrator,
4) the assessment criteria for administration efficiency,
5) the scope of responsibility for the entrusted property,
6) the term of the agreement.

The Act of April 30, 1993 concerning national investment funds and the privatization thereof, which becomes invalid on January 1, 2013,[32] indicates that a fund may enter into an agreement on the management of its property with a management company. Such an agreement is concluded by a fund represented by the supervisory board. The agreements concerning the management may be concluded by funds with the Treasury being a sole shareholder thereof and only with the management companies selected within a tender procedure by the Selection Committee specified in art. 15 (3), (art. 21).

A contract between a fund and a management company may specify that the fund will grant a commercial proxy to the management company. If a commercial proxy is granted to the management company, the name of the company and names of people exercising the rights of proxy should be disclosed in the commercial register. The contract may not release the management

[31] Act of April 30, 1993 concerning national investment funds and the privatization thereof (*Dziennik Ustaw*, No. 44, item 202, as amended).
[32] *Dziennik Ustaw* of May 29, 2012, item 596.

company from its obligation to pay all costs and expenses incurred by the fund and due to the company, or incurred by the company or its representatives and consultants in relation to the performance of obligations by the company.

Legal acts performed by the third party with a person exercising the rights of a commercial proxy of a fund which is a legal person are valid even if the name of the commercial proxy or the name of the person acting as a commercial proxy is not disclosed in the commercial register upon the performance of the legal act. Acting without proxy or exceeding the scope of proxy by a person disclosed in the commercial register who exercises the rights on behalf of the commercial proxy of the fund which is a legal person does not affect the validity of legal acts performed by this person with the third party unless the third party acted in bad faith (art. 22). The obligations and rights of the management company are specified in the statute of the fund and in the contract between the fund and the management company. The statute of the fund and the contract between the fund and the management company may not exclude or limit the liability of the management company for damage caused to the fund as a result of intentional guilt or gross negligence (art. 23).

Each modification of significant provisions of the contract between the fund and the management company, in particular each modification of conditions of remuneration due to the management company, requires the approval of the general meeting of shareholders of the fund. The fund may terminate the contract with the management company with no statement of reasons, with a period of notice no longer than 180 days. If the contract is terminated by the fund in circumstances for which the management company is not responsible, a possible contractual compensation provided for the management company on that account may not exceed a half of the yearly lump sum remuneration for management.

If the contract between the fund with the Treasury being a sole shareholder thereof and the management company provides for a yearly lump sum remuneration for management, yearly remuneration for financial results of the fund, or final remuneration for financial results of the fund, the following principles of remuneration due to the management company are applied:

1) the yearly lump sum remuneration for management is specified in the tender described in art. 21 (2),
2) the yearly remuneration for financial results of the fund, including the remuneration expressed as a percentage of shares of the fund, is specified as an amount which does not exceed the value of 1% of shares of the fund for each year of the provision of services by the management company, taking into account the amount obtained from the sales of shares and the value of due dividend,
3) the final remuneration for financial results of the fund, including the remuneration expressed as a percentage of shares of the fund, is specified in both cases as an amount which does not exceed the product of the value of

0.5% of the shares of the fund and the number of years during which the management company provided its services to the fund, taking into account the amount obtained from the sales of shares and the value of due dividend; such a remuneration may only be paid after the expiry of the contract with the management fund (art. 24).

The principles of remuneration due to the management company providing services to the fund where the Treasury ceased to be a sole shareholder must meet the condition that the part of the remuneration which depends on the financial results of the fund may not exceed the value of 2% of shares of the fund for each year of the provision of services by the management company, also in the event when it is expressed as a percentage of shares of the fund (art. 24).

The Act of August 30, 1996 concerning commercialization and privatization[33] determines that the management of a company may be entrusted to a natural person by way of a contract in companies formed as a result of commercialization. In such an event, a one-person management board is established in the company and a person entrusted with the management obligations becomes a member of the management board. The person who the management obligations are entrusted to is selected as a result of a competition conducted by the supervisory board. The decision to conduct the competition is made by the general meeting of shareholders. The contract specified above is concluded on behalf of the company by the supervisory board upon the consent of the general meeting of shareholders. It should include, in particular, the following:

1) the obligations of the person entrusted with the management obligations, including the scope of modifications and facilitations in an establishment of the company (reorganization of the company),
2) the remuneration due to the person entrusted with the management obligations, specified in the manner which considers the relationship of the remuneration with the financial results of the company and the extent to which the tasks which are a part of the obligations specified in item 1 are completed,
3) the term of the contract,
4) reasons for an early termination of the contract.

The contract has to be submitted to the court which keeps the relevant register.

The characteristic of "agreements concerning management" in the regulations defined above is the entrusting of the management of an enterprise within a narrower or wider scope. A manager may be a natural or legal person. Furthermore, the acts listed above regulate the management of a specific type of

[33] Act of August 30, 1996 concerning commercialization and privatization (i.e. *Dziennik Ustaw* of 2002, No. 171, item 1397, as amended).

an enterprise which is a part of the state property. This has an influence on the specific procedure of nominating managers, specific principles of remuneration due to them, and principles of liability.[34]

III.

Natural persons providing services in person based on agreements concerning the management of an enterprise, management contracts, or similar agreements are or are not VAT payers depending on the legal relationship which forms the basis for the provision of such services.

Management services provided as a part of business activities are, as a rule, taxed based on art. 5 (1), art. 8 (1), and art. 15 (1-2) of VAT Act of March 11, 2004 (*Dziennik Ustaw*, No. 54, item 535) upon general principles. However, if activities specified in art. 13 (9) of the Personal Income Tax Act of July 6, 1991 (*Dziennik Ustaw* of 2000, No. 14, item 176, as amended), i.e. activities performed in person based on agreements concerning the management of an enterprise, management contracts etc., are performed by persons who, as a result of the activities, are bound to the party ordering such activities with legal relationship between the ordering party and the person performing the activities, these activities are excluded from VAT obligations concerning the conditions of the performance thereof, remuneration, and liability of the ordering party.

Management contract are not taxable with VAT if they specify the conditions of work and the remuneration due to the manager and if they state that the ordering party is liable for the manager's activities towards the third party. These elements of a legal relationship correspond to properties of employment relationship. This, in turn, results in the fact that the activities are not performed by the manager independently, on his own, and on his own responsibility; therefore, the activities are not taxable with VAT.

However, the parties to a contract are not always able to form the contents of the contract as they wish, by including the provisions specified in art. 15 (3) of the VAT Act. The literature indicates that the examples of income recognized exclusively as income on the business activities as understood in art. 10 (1) (3) of the Personal Income Tax Act may also include income from a share in a registered partnership *[spółka jawna]* providing management services for another entity.

Pursuant to art. 22 of the Act of September 15, 2000 "Code of Commercial Companies",[35] a registered partnership is a partnership which runs an enterprise with its own business name but is not any other commercial company. Each partner is held responsible for the partnership's obligations with all his estate

[34] Cf. J. Kruczalak-Jankowska, *Umowy menedżerskie*, Warsaw 2000.
[35] *Dziennik Ustaw* No. 94, item 1037, as amended.

with no limitations, jointly and severally with other partners and the partnership itself.

Income from a share in a registered partnership providing management services for another entity should be qualified as income from non-agricultural business activities as understood in art. 10 (1) (3) of the Personal Income Tax Act.[36] The source of income of partners in partnerships (including registered partnerships) is a non-agricultural business activity, in the light of the provisions of the Personal Income Tax Act.

Pursuant to art. 5a (6) of the PIT Act, non-agricultural business activities are understood as gainful manufacturing, constructing, trade, and service activities as well as activities consisting in prospecting for, identifying, and mining ores from deposits; these activities are performed using tangible and intangible assets, in one's own name, in an organized and constant manner and the income from such activities is not recognized as other income from the sources listed in art. 10 (1) (1, 2 and 4-9). Furthermore, pursuant to art. 5b (10 of the Personal Income Tax Act, activities are not recognized as non-agricultural business activities if all of the following conditions are met:

1) the ordering party is held responsible to the third party for the results of these activities and the performance thereof, with the exclusion of the responsibility for the commitment of unlawful acts,
2) the activities are performed under the management of the ordering party and in the place and time specified by the ordering party,
3) the person performing the activities is not exposed to the economic risk related to the performed activities.

Pursuant to art. 13 (9) of the PIT Act, income from activities performed in person is recognized as income from agreements concerning the management of an enterprise, management contracts and similar agreements, including income from agreements of this type concluded as a part of non-agricultural business activities performed by the taxpayer.

Pursuant to art. 13 (8) (a) of the Personal Income Tax Act of July 26, 1991, income from activities performed in person, specified in art. 10 (1) (2), is recognized as income from services performed based on a mandate contract or a contract to perform a specific task, obtained only from natural persons conducting business activities, legal persons and their organizational units, or organizational units with no legal personality, with the exception of income from agreements concluded as a part of non-agricultural business activities performed by the taxpayer or income specified in item 9 of the Personal Income Tax Act mentioned above, i.e. income from activities performed in person based on

[36] Personal Income Tax Act of July 26, 1991, i.e. *Dziennik Ustaw* of 2010, No. 51, item 307, as amended, quoted as the PIT Act.

agreements concerning the management of an enterprise, management contracts, and similar agreements.

In order to determine whether activities are performed in person (art. 10 (1) (2) of the Personal Income Tax Act specified above) or are recognized as non-agricultural business activities (art. 10 (1) (3) of the above Act), it is necessary to examine the properties of the business activities, in particular the registration of the taxpayer as a business entity (entrepreneur), actual performance of the activities for the purposes of earning, performing them professionally in one's own name and on one's own account, and whether the activities are organized and permanent. Activities performed in person do not have to meet these criteria, in particular the requirement of permanence and a specific degree of organization.

Pursuant to art. 8 (1) of the PIT Act, the income from a share in a partnership which is not a legal person, joint ownership, joint venture, joint possession, or joint use of things or material rights is specified for each taxpayer proportionally to his right to the share in profits (...). These principles are used, accordingly, to accounting for tax-deductible costs, non-tax-deductible costs, and losses (art. 8 (2) of the PIT Act).

In the light of the provisions specified above, the income from a registered partnership which provides management services should not be qualified as income from activities performed in person, as specified in art. 13 (9) of the PIT Act. In this case, a manager-partner does not provide management services in person because it is a registered partnership with the status of an entrepreneur that is a party to the agreement concerning management. As a part of the performance of the provisions of a contract concluded with the managed entity, the registered partnership delegates its partners, who take actual part in the management of the company. Therefore, a partner to the partnership does not have income from the activities performed in person (the provision of the management services) but from his share in profit of the registered partnership.

IV.

To sum up, it should be stated that the issues of management contracts are complex and multidimensional. They include civil law as well as public law aspects. The discussion presented above has been limited to selected legal considerations. This, however, does not mean that the institution of a management contract can be discussed only in this context. It is certainly related with many economic or social issues because management contracts are one of the forms of managing an enterprise which appeared together with the market economy.

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COMPETENCES OF AIRPORT SERVICES IN MAINTENANCE OF THE MOVEMENT AREA

Abstract

One of the fundamental activities performed at an airport is its maintenance in the condition which enables safe and efficient air operations. The conditions specified in Annex 14 to the Convention on international civil aviation obligate the member states to take any essential measures to remove all contamination from the movement area[1] as quickly and efficiently as possible in order to ensure a proper adhesion coefficient (friction coefficient) and low rolling resistance. Furthermore, Annex 14 contains a demand for maintaining the surfaces clean and removing stones and other objects which may damage the construction of wings or engines or reduce the efficiency of other airplane subassemblies. It should be emphasized here that the main and the most important responsibility of airport services is to remove all contamination and waste which could have any adverse effect on air operations from the apron and the movement area. Therefore, research is constantly being conducted aiming at the optimization of economic and use conditions as well as the efficiency of mechanic and chemical methods of removing contaminations from the apron and the movement area. In addition, it is also necessary to measure the friction coefficient and, what follows, to develop best possible methods of such measures.[2] The efficiency of airport services in the maintenance of the movement area depends, to a great extent, on competences of these services and their experience, which make it possible to perform the assigned tasks and responsibilities properly. A high level of competences of airport services has an influence on making good and correct decisions, what is sometimes critical for safety in the maintenance of the movement area.

[1] The movement area is a part of an aerodrome for taking off, landing and taxiing of air planes, with aprons.
[2] ICAO Doc. 9137/Part 2 *Airport services manual – pavement surface conditions*, edition 3, 1994.

Competences of airport services

The notion of "competences" has many meanings. From the standpoint of legal sciences, "competences" means a scope of authorizations and powers of a body or an official to deal with specific issues and make decisions concerning these issues.[3] In this approach, this notion means that a person who performs a specific public function makes his or her decisions as a part of the powers granted to him or her, according to his or her competences.

Another meaning of "competences" is a notion from management sciences concerning, most of all, the state of having an updated interdisciplinary knowledge of a specific area and essential skills, which make it possible to perform the assigned tasks and responsibilities properly and which ensure that goals of a specific organization are pursued efficiently.[4] In this case, a fact that members of an organization (employees) have suitable competences is sometimes critical to making good decisions. In the event of airport services, suitable competences are a main factor influencing the level of services provided by them. This translates into the efficient course of air operations and, as a consequence, into reduced delays in air traffic. High competences of airport services often decide about lives of dozens or even hundreds people.

According to Józef Penc "the main condition of efficiency includes suitable competences, i.e. rights, knowledge, and skills to act in order to obtain a proper result in a given situation, using specific measures and taking external limitations imposed by the environment into account".[5] This applies to airport services as well. The conditions of their operation in a specific situation, taking into account the use of available machines and devices and time available for the performance of the task[6], include their competences. The result of airport services operations depends, to a great extent on their individual experience consisting of knowledge or skills of observing certain objects, events, and phenomena. Official documents of the International Civil Aviation Organisation also discern the role of air services competences as a factor which has a positive influence on the course of air operations. The examples include the obligation to inform those interested

[3] http://doroszewski.pwn.pl – *Słownik języka polskiego W. Doroszewskiego*, Wydawnictwo Naukowe PWN S.A.

[4] W. Walczak, *Przywództwo i motywowanie w procesach zarządzania kompetencjami pracowników*, E-mentor No. 1 (38) / 2011.

[5] J. Penc, *Kreatywne Kierowanie*, Agencja Wydawnicza Placet, Warsaw 2000.

[6] One of external limitations influencing the operation of air services is the time between operations of airplanes. Airport services may perform the works consisting in maintaining runway strips clean only when no operations are conducted there. However, if contamination on runway strips presents a significant hazard to air safety, operations of air planes are suspended until the contamination has been removed by air services.

with air operations of the condition of runway strips. Pursuant to Annex 15 to the Convention on international civil aviation, such information in a special form should be published in some cases, including when there are changes in the conditions of a runway strip which can be recognized as significant according to experience or local situation. This means that airport service workers, judging by their knowledge and skills supported with many years of experience, publish specific information on the condition of runway strips when they think it is justified. Therefore, a high level of competences of airport services has a significant influence on the process of making correct decisions.

Competences of air services and safety issues

Ensuring safety is a main task of each service related to aviation. Regardless from whether it is the ATC (Air Traffic Control), FIS (Flight Information Service), or AIS (Aeronautical Information Service), ensuring safety is the most important task upon which all other tasks depend. This also concerns the service which may, seemingly, have a small influence on ensuring the safety of air operations (as well as the efficient and regulated air traffic flow). However, the reality is different. We are talking about the airport service which is often an organizational unit of an airport (e.g. Airport Surface Maintenance Department in the case of civil airports or Airport Service Company in the event of military airports). A serious incident or an airplane disaster always focuses the attention of mass media all over the world. Apart from the spectacular character of such an accident itself, this results from the fact that during such an incident lives, often of hundreds of people, are endangered. Chances of survival of even a small number of passengers during a disaster are slim. Therefore, ensuring a proper level of safety is a very responsible task, one which is crucial in the level of competences of the whole air staff.

It is widely known that the most critical air operations (in terms of safety) are the take-off and the landing of an airplane. This results from the specificity of these operations. In the case of take-offs, the engine (or engines, in the event of airplanes with multiple engines) of an airplane is working in top gear in order to reach the speed required to take off and proper altitude as quickly as possible. As a consequence, large quantities of air with all contaminations on the runway strip are sucked into the engine. This may lead to a damage to turbine blades or, in extreme cases, to a total damage of the engine, what may result in a disaster. The photos below present the consequences of sucking foreign bodies into the engine.

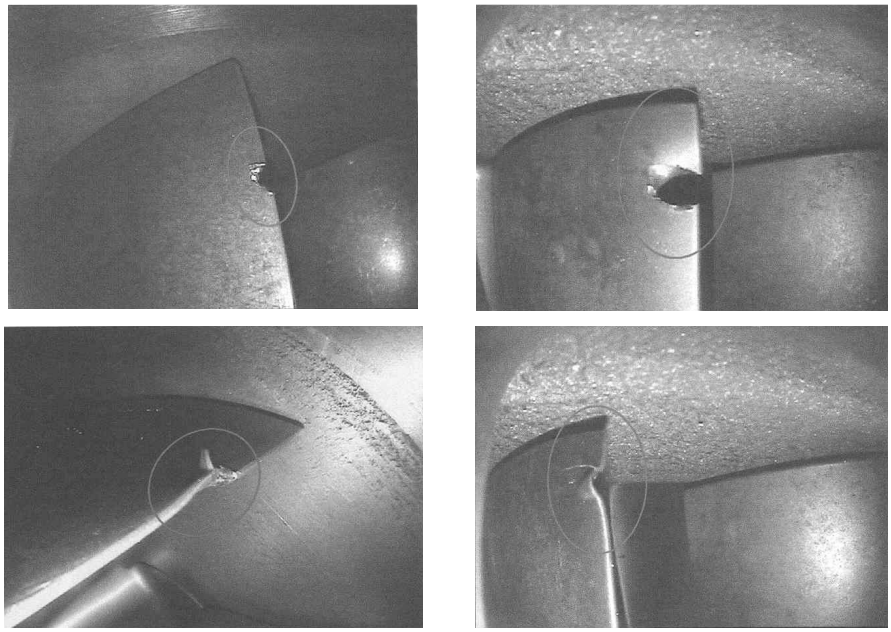

Photo 1. Damage to the blades of a MIG-29 compressor after sucking contamination
Source: 48th Conference of the Safety of the Polish Air Force Flights, Dęblin 2005.

Photo 2. Damage to the blades of a Boeing 757-200 compressor
after sucking contamination
Source: www.pasazer.com

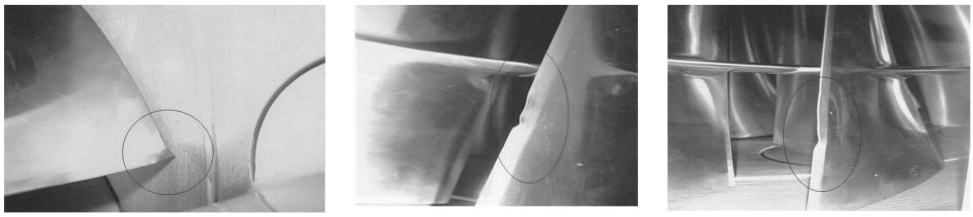

Photo 3. Damage to the blades of a SU-22 compressor after sucking contamination
Source: 48th Conference of the Safety of the Polish Air Force Flights, Dęblin 2005.

The photos presented above show the engines of planes which, fortunately, managed to land safely. However, attention should be paid to Photo 2 of Boeing 757-200. This plane belongs to Fisher Air Sp. z o.o. On December 31, 2005, the plane was damaged at the Warsaw-Okęcie airport as a result of sucking contamination off the runway strip. Both engines of the Boeing were damaged during the take-off, what could have had tragic consequences. The accident made it impossible to use the plane, what caused notable financial losses to the carrier. This put the carrier in a very difficult situation because the company had to pay for the repairs, while the plane was defective and could not bring any income. Obviously, Fisher Air Sp. z o.o. announced that it was going to sue the manager of the airport for the improper maintenance of the airport surfaces[7]. This event shows clearly how important the proper preparation of the movement area is for ensuring safety of air operations and from economic standpoint as well.

Analysing the photos above, it should also be realized what requirements must be met by blades of the turbine compressor of an airplane engine and, what follows, how serious damage can be caused by seemingly small stones or pieces of asphalt. During the operation, engine blades are subject to twisting and bending by aerodynamic forces, bending and stretching by centrifugal forces (compressors work at even a few dozen thousand revolutions per minute), changing stresses as a result of vibrations, high temperature (800÷1200°C for turbine blades, 300÷600°C for compressor blades), sudden changes of temperature in transitory states of the engine, the influence of polluted air, electrodynamic corrosion, and gas corrosion in increased temperatures. That is why, titan, among other metals, is used to manufacture turbines and compressors as it is highly mechanically resistant[8]. The engines of airplanes which the compressors shown in the photos come from did not lead to disasters; however, such serious damage had a significant adverse effect on the engine operation.

[7] P. Cybulak, *Fischer kontra PP Porty Lotnicze*, 2006.
[8] J. Sińczak, S. Bednarek, A. Łukaszek-Sołek, P. Chyła, *Wytwarzanie łopatek turbin metodami przeróbki plastycznej – analiza numeryczna*, Mechanik No. 8-9, 2010.

In extreme cases, damage to the leading edge of blades may disturb the air flow, what may lead to an uncontrolled combustion process and, as a consequence, to the switching off of the engine. Losses in the material of blades or even the delicate bending thereof is certain to cause changes in the distribution of mass, what, with a dozen or even a few dozen thousand revolutions per minute, must cause strong vibrations of the whole engine and partial or total damage to bearings supporting the shaft connecting the turbine with the compressor. Such events end with the airplane disaster most frequently. Therefore, the proper maintenance of the manoeuvring area of the airport and informing the parties interested in air operation of the condition of that area is very important.

Competences of airport services concerning equipment

Proper equipment is closely related to a specific level of airport services competences. The highest level of competences does not guarantee a proper performance of some tasks when there is no suitable equipment. In order for airport services to perform their assigned tasks successfully, they must use a wide range of specialist equipment, from ordinary snowploughs, which can be seen on roads in winter, to specialist multifunctional equipment. Obviously, it would be ideal to purchase the most efficient machines and devices in quantities which would ensure the shortest possible time of removing all contamination covering the manoeuvring area of an airport. However, this is related to very high costs. Therefore, if the entity responsible for the maintenance of an airport purchases modern machines and devices in quantities ensuring the shortest possible time of removing the contamination, it will have to recover the invested funds by increasing the payment for the provided services. It should be remembered that airlines are not charities which focus only on the transport of people and cargo from one place to another. Their existence depends on profits from the activities they conduct. Therefore, the increase in airport fees will translate into the increase in the prices of air tickets; this, in turn, may effectively discourage airlines from using such airports. In the era of competition, the winner is the party who offers the same product (service) for a lower price.

That is why, machines and devices used by airport services are different at various airports although the parameters of runway strips of individual airports, civil as well as military ones, are similar. The average runway strip is 2500 metres long and 60 metres wide. Most often, the differences include the number and size of aprons, as they depend on widely understood geographic and economic conditions. It is obvious that the best location for an airport is the area near a city with a large number of residents with the highest possible economic and social status. The closer an airport is located to the city centre, the better. However, great proximity may limit a potential expansion of the airport if it is

required as a result of an increase in the number of air operations. Examples of such airports include Chopin Airport in Warsaw, which requires expansion as a result of a constantly increasing number of air operations; however, such expansion is impossible due to high density of the city.

Another factor influencing the location of an airport is its proximity to other airports. Examples include the airport in Zielona Góra, which does not handle international connections due to the proximity of German airports in Berlin and Dresden. In addition, low population and poor business infrastructure within the nearest area of the airport resulted in the fact that in 2011 the airport provided its services to 6,940 passengers only[9]. The Figure below presents the data on the number of passengers served at individual airports in the preceding year.

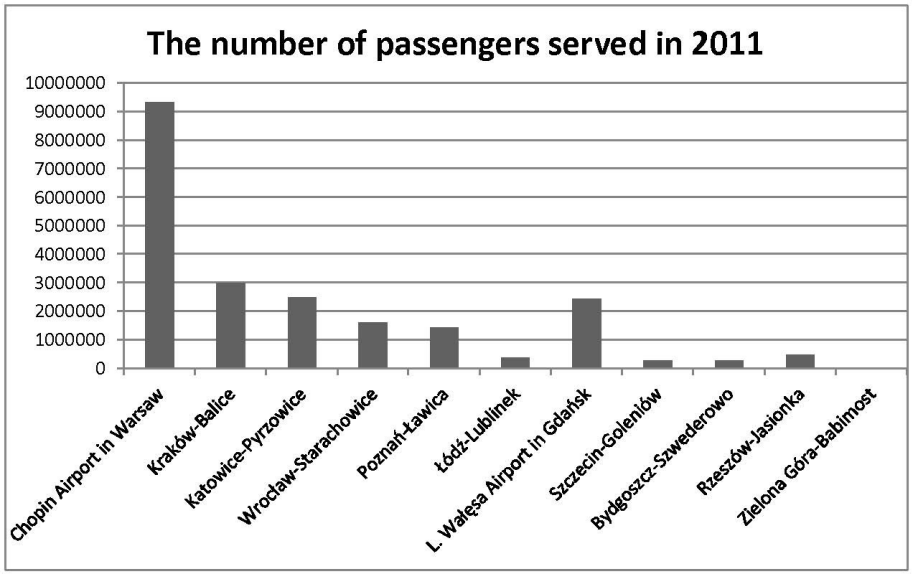

Fig. 1. The number of passengers served in 2011
Source: the authors own work based on information from ULC obtained from airports, Warsaw, January 2012.

The data presented above show the relationship between the number of passengers served and the required airport infrastructure. The more passengers were served at an airport, the more place for planes transporting the passengers is needed. Thus, airport services will have to clean more surfaces. This, in turn, translates into the quantity and quality of equipment.

[9] *ULC study based on information obtained from airports*, Warsaw, January 2012.

Airport services have a range of specialist equipment, which may be divided into the following categories:

I. Ordinary airport snowploughs,
II. Snow cutters,
III. Spreaders,
IV. Sprayers,
V. Vacuum cleaning machines,
VI. Cleaning sets,
VII. Auxiliary machines and devices.

The first category of the airport equipment is the largest. It includes all types of 3- and 4-metre mouldboard ploughs (photo 4a), which can be seen on roads in winter, as well as high-efficiency 6- and 8-metre ploughs. In general, these are simple devices hooked up to a truck in order to remove snow lying on the movement area. The efficiency of these devices depends on the width and construction of the mouldboard and the parameters of the carrier, i.e. the truck they are hooked up to. Obviously, the snow pushed aside by ploughs will form mounds which may be a hazard for airplanes with large wingspan. Therefore, it is very important to have auxiliary machines, i.e. ordinary wheel loaders, in order to load the snow on dumper trucks, which will transport it to another place.

Another category of devices (which may replace wheel loaders) include snow cutters (photo 4b). These devices are useful with snow mounds on the edges of a cleaned area and very heavy snowfall, when the snow layer on the ground is a few centimetres thick. The efficiency of such devices is 5000-8000 tonnes per hour and snow thrust of up to a few dozen metres.

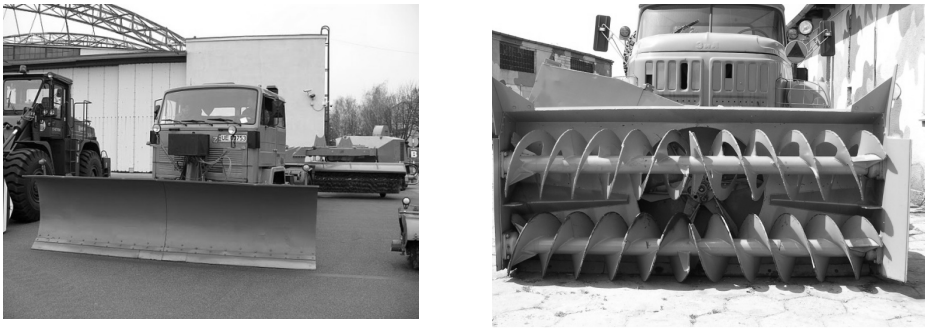

Photo 4. Airport snowploughs: a) 4-metres ordinary mouldboard snowplough, b) snow cutter
Source: the author's own collection.

Another two types of machines are used to cover airport surfaces with solids or liquids. Spreaders (photo 5a) spread solid substances (most frequently

saltpetre) which melt snow or ice. However, due to environmental and practical reasons, liquid chemicals are used more often. They are spread on the surfaces of taxiways with special sprayers (photo 5b). These devices can often be seen on roads but, contrary to airport devices, road versions are not very efficient. Arms of airport sprayers are of app. 40-metres span. In most cases, one run of the device is enough to melt the lying snow or ice efficiently.

Photo 5. a) Spreader, b) sprayer
Source: websites of manufacturers.

Airport vacuum cleaning machines (photo 6a) suck all solid contamination, such as dust, sand, small stones, and fragments of surfaces, e.g. asphalt lumps or pieces of concrete; however, they cannot be used to suck snow and large amounts of water. These limitations cause that they are used in summer most frequently. However, these machines are installed on a truck chassis (as most of machines and devices used for airport maintenance are), so it is also possible to install a snowplough (photo 6b). Then, they can also be used in winter, when the manoeuvring area is covered with snow. Machines of this type are highly effective in cleaning surfaces (they can remove all types of contamination efficiently) but are also rather slow, what translates into low efficiency. That is why they are used rarely and during periods of low intensity of air operations.

a) b)

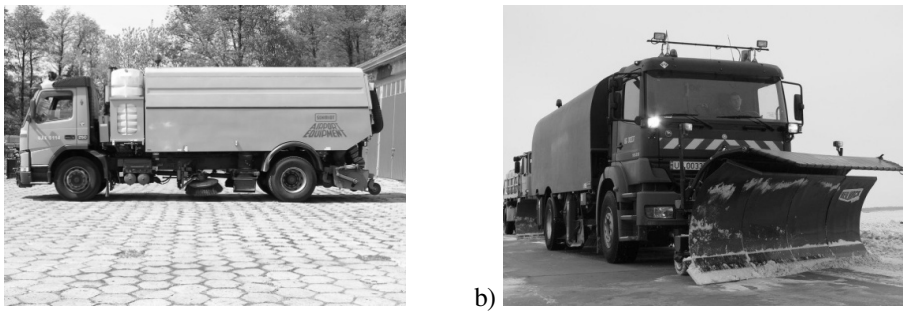

Photo 6. a) airport vacuum cleaning machine, a side view, b) airport vacuum cleaning machine with a snowplough attached
Source: a – the author's own collection, b – 31th Air Base.

Machines which are used in airports most frequently (owing to their universal character) are cleaning sets which consist of a snowplough, a brush, a blower, and, depending on the version, a magnetic plate. These are specialist high-efficiency machines (the maximum working speed is app. 60 km/h). They may be used in winter, to remove snow and water from melted snow, and in summer, to sweep all contamination and blow off water. In addition, a magnetic plate is used to catch ferromagnetic contamination. The photos below show an example of such a machine.

a) 

b) 

c) 

d) 

e) 

f) 

Photo 7. Cleaning set: a) a cleaner with a tractor unit with no snowplough attached, b) a cleaner with a tractor unit with a snowplough attached, c) a brush, a front view, d) a brush, a side view, e) a blower, f) a magnetic plate

Source: a and f – websites of manufacturers; b, c, d, and e – the author's own collection.

An additional group of machines and devices used by airport services in cleaning airport surfaces includes all types of auxiliary machines and devices (cat. VII), such as wheel loaders, which have already been mentioned, various types of dumper trucks, bulldozers, diggers, and specialist machines for increasing (or reducing) surface coarseness and for de-gumming surfaces.

Thus, there are many different machines and devices used by airport services to maintain airport surfaces properly. The table below presents the equipment possessed by civil airports.

Table 1. Basic equipment of Polish civil airports used to maintain runway strips

	Snowplough	Snow cutter	Spreader	Sprayer	Cleaning set
EPBY	**4**	**1**	**2**	**-**	**2**
EPGD	**2**	**-**	**1**	**1**	**6**
EPKK	**-**	**-**	**-**	**5**	**13**
EPLL	**7**	**2**	**2**	**3**	**7**
EPKT	**12**	**3**	**1**	**2**	**-**
EPPO	**10**	**-**	**2**	**2**	**5**
EPRZ	**2**	**3**	**2**	**2**	**7**
EPSC	**8**	**-**	**2**	**2**	**-**
EPWA	**3**	**3**	**3**	**3**	**11**
EPWR	**2**	**2**	**2**	**2**	**4**
EPZG	**6**	**1**	**2**	**1**	**4**

Source: The author's own study based on AIP Polska.

Analysing the data presented above, it can be seen that the most frequently used machines and devices include cleaning sets and ordinary snowploughs. Their numbers in individual airports is consistent with the number of operations performed in a relevant airport and, as a consequence, with the number of passengers served (refer to table 1). Large differences between the equipment of individual airports may be explained with (apart from economic factors) different levels of airport services competences.

Influence of the competences of an airport service manager on the level of information provided in real time

The proper preparation of the movement area is very important for the safety of the landing operations. However, it is not always possible (or too high costs make it unprofitable) to prepare the surface for the movement of airplanes in

a way that ensures the highest possible friction coefficient.[10] Light rainfall or snowfall may have adverse effect on the adhesion of airplane wheels. In such an event, airport services have to provide the airplane crews with all information on the conditions at the airport, in particular the information on the friction coefficient. The safety levels during the ground run of an airplane[11] are closely correlated with the friction coefficient. One should be aware that the average passenger plane weighs app. 100 tonnes[12] and that it comes in to land with the speed of app. 250-300 km/h. Safe stopping of an object with such parameters requires a runway strip app. 2000 long[13] with a good friction coefficient of 0.75 for dry bituminous surface[14]. However, when this coefficient is reduced by 0.05, it is regarded as a significant change in conditions[15] and may have an influence on safety of the performed operation. With too low values of the coefficient, it is easy to get airplane wheels in a skid, what will always result in the longer braking distance and, in extreme cases, may also lead to the plane falling out of the runway strip. In addition, it should be emphasized that, in the case of modern turbojet airplanes, the difference between the braking distance on a dry surface and that on the icy surface may be, in extreme cases and for planes with poor landing parameters, as much as 900 metres.[16] This means that in disadvantageous weather conditions, when the friction coefficient is low and the landing airplane has poor braking parameters, the runway strip may be too short for the ground run. Suitable level of competences of airport service employees should guarantee a proper assessment of the movement area surface, the measurement of the friction coefficient, and the provision of this information to all parties interested with air operations as soon as possible. In this case, time is of material importance; it should be remembered that airplanes travel the average of 10-15

[10] The friction coefficient is a relationship between the friction force between a wheel and a runway strip surface and the value of the standard reaction. A higher value of the friction coefficient means that the braking force of the airplane wheels is higher and, as a consequence, the landing distance is shorter and the landing operation is safer.

[11] The ground run is a part of the landing operation consisting in stopping the airplane after its wheels touch the surface of a runway strip. This parameter is expressed in metres and describes the way travelled by the landing airplane from the moment of touching the surface of a runway strip until the complete stop.

[12] A 100-tonnes airplane belongs to the "medium" wake turbulence category. There are also the categories of "heavy", from 136 to 540 tonnes, and "jumbo", over 540 tonnes.

[13] For instance, the ground run for Tu-154 is 2100 m. http://pl.wikipedia.org/wiki/Tu-154.

[14] Politechnika Wrocławska, Instytut Inżynierii Lądowej Zakład Dróg i Lotnisk, Projekt wstępny drogi klasy technicznej G, Wrocław 2002.

[15] Annex 15 to the Convention on international civil aviation. Służba informacji lotniczej, edition 13, 2010.

[16] ICAO Doc. 9137/Part 2 *Airport services manual – pavement surface conditions*, edition 3, 1994.

kilometres per minute when flying. Below, the issues related to the measurement of the friction coefficient are presented as well as the SNOWTAM form, which is used to provide significant information on the condition of the movement area.

Measurement of the friction coefficient

Airport authorities are obliged to determine, for their own purposes, the friction coefficient in winter by performing daily measurements. They are held responsible for the decision whether the condition of the surface ensures safety of air operations. Obviously, certain specific weather conditions require special attention. These include, for example, the fluctuations of the temperature around the point of freezing or changing conditions when, for example, warm damp air touches a very cold surface. In addition, it should be expected that, if weather forecasts warn against a coming snowfall or black ice, it is likely that reports on the surface condition will have to be drawn up each hour or even more frequently as well as each time when it is suspected that the conditions on the runway strip have significantly changed (or when it is a consequence of other obvious reasons).

It should also be underlined that in difficult situations of this type, different values of the friction coefficient may occur depending on the material of the surface and on a part of the runway strip. When touching the surface, airplane wheels leave thin layers of gum, what also has an adverse effect on the friction coefficient. Therefore, the measurements of the friction coefficient should be performed on the surface of an actually used runway strip rather than on nearby strips or taxiways, which may be made of a completely different material.

The friction coefficient is determined through assessment or measurement. The selection of the method is not random; this means that specialist measurement devices should always be used if available. The assessment is performed if an airport does not have specialist equipment, what is often the case at airports with small traffic or military airports. The assessment is performed by a trained employee who, using a car, performs the braking test repeatedly on various parts of a runway strip, taxiways, and aprons. Based on the braking test, the braking efficiency is expressed using the 6-point scale. The accuracy of this method depends closely on the knowledge, skills, and experience of the employee. Braking, assessed this way, can be:

- 5 – good,
- 4 – medium/good,
- 3 – medium,
- 2 – medium/poor,
- 1 – poor,
- 9 – unreliable.

The assessment of braking is not accurate; therefore, the airplane pilot is obliged to exercise due care during the ground run.

Another method of determining the friction coefficient is the measurement. The measurement makes it possible to provide the pilot with a precise value of the coefficient and, what follows, to select the maximum possible braking force. The measurement can be performed using a device with an additional wheel which measures the skid when touching the examined surface. This device may have the form of an additional set towed with any vehicle or even a vehicle itself if it is equipped with an additional wheel. Depending on the method of leading or braking the testing wheel, the methods of measurement of the friction coefficient of aerodrome surfaces may be divided into 4 groups as follows:

1. Devices for the measurement of crosswise friction. This is a group of measurement devices where the testing wheel is not braked; it rolls freely and it deviates from the motion direction by a specific angle which depends on the general concept of the construction. The friction coefficient is determined according to the classical definition of friction by comparing the crosswise force having an effect on the wheel in a free rolling movement diagonal to the motion direction with a static load on the wheel (or wheels if the measurement system is equipped with two wheels). This group of devices includes Mu-Meter and SCRIM.
2. Devices for the measurement of the longitudinal friction coefficient with a permanent skid of the testing wheel on the surface. This is a large group of measurement devices, where the testing wheel moves, on the surface, with a skid forced kinematically or hydraulically, with a zero deviation from the motion direction. These devices measure the longitudinal friction coefficient by comparing the friction force with static pressure (load). This group of measurement devices include Griptester, DWW Trailer, and Skiddometer BV-11, which can often be seen at airports.
3. Devices for the measurement of the friction coefficient in conditions of a changing skid of the testing wheel. This is a specific group of measurement devices, where the testing wheel is braked with a controlled skid during the measurement. These devices are supposed to make it possible to determine complete parameters of longitudinal friction. These group includes Norsemeter.
4. Devices for the measurement of the friction coefficient with a full blockade of the testing wheel. This is a large group of measurement devices used as many construction versions (one or two wheels). During the measurement, the testing wheel (wheels) is completely blocked. The friction coefficient is measured according to the classical definition of friction (the testing wheel is not turning). This group of measurement devices includes Skiddometer BV-8, Stuttgarter Reibugsmesser, and Skid Resistance Tester.

When comparing the listed groups of measurement devices, it should be emphasized that different measurement conditions (mainly skid) cause that each of these devices measures the friction coefficient using a different scale with different numerical values. This is presented in Fig. 2, which shows all groups of the measurement devices with the example of longitudinal friction measurements at an aerodrome surface.[17]

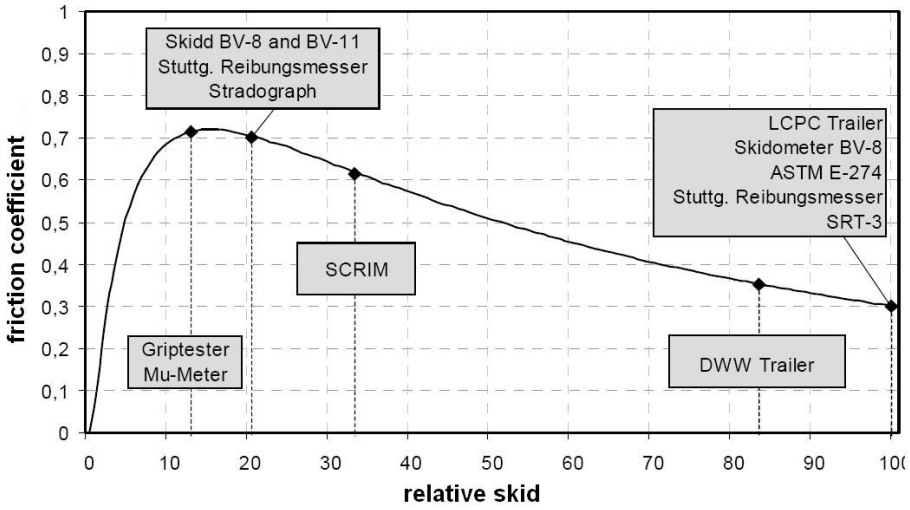

Fig. 2. Diversification of the methods of measuring the friction coefficient with exemplary measurements[18]
Source: http://www.gddkia.gov.pl

After a measurement, results should be recalculated and referred to a uniform scale, to provide airplane crews and air traffic services with a complete view of conditions on the runway strip. It is assumed that the following values of the friction coefficient (measured or calculated) are equal to the braking:

- 0.40 or more – GOOD,
- 0.39 to 0.36 – MEDIUM/GOOD,
- 0.35 to 0.30 – MEDIUM,
- 0.29 to 0.26 – MEDIUM/POOR,
- 0.25 and less – POOR.

[17] T. Mechowski, *Sprawozdanie z realizacji pracy TD-71*.
[18] For the purposes of this work, an example of real longitudinal friction measurements of a road surface treated as an airport surface have been adopted. Owing to the similarities between technical characteristics of both surfaces, the differences are negligible.

Advantages of devices of this type include accurate measurements; their disadvantages include high costs of the device (vehicle) itself as well as of the tire, which wears rather quickly. Examples of such devices are presented in the photos below.

Photo 8. Examples of devices for the measurement of the friction coefficient:
a) towed with a vehicle, b) attached to a car
Source: websites of manufacturers.

Another type of a device which measures the friction coefficient is a group of devices fixed on a vehicle and measuring the delay of the vehicle during braking. They include a braking force measurement devices – dynamometers – and Tapley meters. Advantages of this solution include a simplicity of measurements; its drawbacks include the possibility of using the devices only in specific conditions, i.e. on tamped down snow, ice, and very thin layers of dry snow. Delay meters cannot be used when the surface is covered with melting snow or slush or when there is a thin layer of water on an icy surface because the measurements can be misleading in such conditions. Measurements of other devices may also be unreliable when surfaces are covered with a certain mixture of contamination and when there are differences between the temperature of the air and that of the surface. The measuring employee should have suitable knowledge and experience in measuring the friction coefficient.

SNOWTAM form

SNOWTAM is a message sent via fixed communications measures (Aeronautical Fixed Telecommunication Network – AFTN, Internet etc.) containing information which is significant for the safety and regularity of air traffic flow, such as the friction coefficient, and type and thickness of contamination on the runway strip, taxiways, and aprons. This is a special

NOTAM series[19] sent when the conditions on a runway strip have changed significantly via air traffic services to an airplane. The following changes in the conditions on a runway strip are considered significant:

1) change of the friction coefficient by 0.05,
2) change of the contamination layer exceeding 20 mm for dry snow, 10 mm for wet snow, and 3 mm for melting snow,
3) change of the available runway strip length or width by 10% or more,
4) all changes of the type or size of contamination which require reclassification in fields F) or T) of the SNOWTAM form,
5) formation and/or changes in the height or distance from the central line of dangerous snow mounds on one side or both sides of a runway strip,
6) any changes of visibility of runway strip lights as a result of the lights being covered,
7) formation or changes of any other conditions recognized as significant according to experience or local situation.[20]

Each of the listed items means that all parameters which have influence on the ground run of an airplane are recognized as significant by the International Civil Aviation Organization and should be sent to airplane crews. In case of a relatively changing weather, airport services may have to measure the friction coefficient and the contamination thickness repeatedly during a day (apart from the cleaning). In addition, after each measurement, appropriate messages should be prepared and sent to those interested in air operations. The time of completing these tasks depends on many factors; however, only one of them changes. The equipment with machines and devices and the system of taxiways, runway strips and technical ways can be qualified as permanent factors because each airport has specific equipment (Table 1) and a permanent system of roads. A changing factor, one which often decides about the performance of tasks by airport services, is the level of competences of the employees. This parameter is changing because knowledge, skills, and experience change in time; they increas after each training and each period of duty. In addition, each employee may have a different level of competences. Therefore, the performance of tasks may depend on which employee is on duty at the given moment.

[19] NOTAM (NOtice To Air Man) – a message sent via telecommunications measures containing information the knowledge of which at an appropriate time is significant for the staff related to air operations.

[20] Annex 15 to the Convention on international civil aviation. *Służba informacji lotniczej*, edition 13, 2010.

Conclusions

Airport services are formed in order to maintain the movement area of an aiport clean, measure the friction coefficient, and draw up and send special messages describing the conditions in the movement area. Proper preparation of this part of an airport has a direct influence on the safety of air operations on ground and the orderly air traffic flow. Precise determination of the friction coefficient and quick provision of all information on the condition of the movement area to those interested in air operations also contributes to the high level of safety. Two methods of determining the friction on a runway strip are widely used, i.e. measurement and assessment. A more precise, though more expensive and complex, method is the measurement using a special device. The assessment of friction is performed by a qualified airport service employee using an ordinary car; the accuracy of this method depends closely on the knowledge, skills, and experience of the employee. Thus, proper performance of airport service tasks depends not only on the quantity and quality of the possessed equipment but also on the level of competences of the employees, which reflects their professionalism. This includes many factors, such as knowledge, qualifications, learnt skills, experience, and adopted attitudes and model behaviours.

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THE ROLE AND IMPORTANCE OF MANAGERIAL COMPETENCES IN THE EFFECTIVENESS OF IMPLEMENTATION OF CHANGES IN AN INDUSTRIAL ENTERPRISE

Abstract

Effective leadership is a principal condition of the effective process of introducing a change. Change managers in an organization perform an essential part in the effectiveness of initiation of changes, and consequently, in the formation of economic development, competitiveness and profitability of an enterprise. They are the ones who substantially initiate and promote changes in an organization and perform the function of the originator of a pro-effectivity organizational culture.

This paper presents the problem on the basis of 20 selected industrial enterprises. The experience of the author in the implementation of systemic changes in enterprises indicate that a shortage of efficient managers in an organization can limit or annihilate prospective results during the implementation of changes.

In the process of creating entrepreneurship in an organization qualifications and competences of middle-level managers gain in importance, determining innovative processes in an organization and having an increasing influence on the strategic success of an enterprise. The author of this article describes factors rationalizing the course of implementing changes and she presents the required and most desirable competences of managers at every stage of introducing changes.

> "There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things."
>
> Machiavelli

Over recent years enterprises have to cope with the necessity of adapting their own development and innovativeness to galloping changes appearing inside an organization and the environment. Since the economic development in Poland and in the world depends on the development of innovativeness, a contemporary enterprise has to become an innovative establishment and continually seek improved solutions in technology, engineering and organization in order to offer better and better products and services to the market to beat the competition with the competitive advantage of values for a customer.

The needs resulting from globalization shape an industrial policy towards maintenance of competitiveness. Qualifications, the technological development, know how and specialist knowledge of collaborators have an increasing impact on the strategic success of an enterprise. According to O. Kunert intangible assets are today a key resource of an enterprise with innovative competences contained therein. They have a spatial dimension of a special nature where the intellectual capital, with acquired knowledge using active growth factors, may gain abilities to transform innovations and act towards the development of an organization.

Polish industrial enterprises still strive with the lack of efficient mechanisms of strengthening changes in an organization, with inability to adapt some changes and solutions to realities of a Polish enterprise and with ineffective utilization of a change for their purposes.

Today′s enterprises are not so stable and foreseeable as they used to be. At present the ability to introduce and manage the change should be supported by a constant observation of the environment and the targets which enterprises should set are the improvement of change management processes and a gradual increase in their efficiency. At present some considerable agitation and engagement of enterprises in Poland in this respect may be noticed, more and more often we observe system and organizational changes such as restructurings, ownership changes, takeovers.

Changes are necessary and they are an important element of a human life and existence of enterprises.

According to J. Penc enterprises today have to introduce changes, but their range and rate are an individual matter. The author quotes the saying well-known in the business world: ‘change or die’. Further he writes that some enterprises make changes and also die, at times mostly as a result of such changes. To succeed, changes should be introduced in a well-balanced and prudent manner. Thus, a certain strategy and tactics of initiating changes ought to be worked out so that changes would not lead to unnecessary confusion and disappointment in organizations but they would bring prospective advantages and be the least arduous for their communities.

Polish enterprises still feel the fear of changes, they do not perceive existing or possible alternatives in this respect; they lack creativity and originality of thinking; they show some excessive inclination to risk or overprudence –

being too conservative and giving excessive weight to worst-case scenarios; they also lack efficient leadership and discussions on reasons and objectives of the change.

The thing expected from enterprises today is a transformation in operations, a new attitude which is expressed in the modification of strategic plans, structures and an organizational culture in the interest of changes. An organization should find within itself some motivation to change and an optimistic belief of a possibility of an activity as well as such potential as skills, competences indispensable for the efficient realization of the change process.

Change management in an organization is a complex and complicated process consisting of a number of components, **however a decisive link in this process is efficient leadership which mainly underlies efficiency and effectiveness in initiating changes**.

According to W. Ratyński leadership means influencing others using educational methods and resources, eliminating coercive relations from the management process, basing the activity of leaders on their authority, especially professional qualifications, practical wisdom, knowledge, personal culture, openness of superiors in their behaviour. An important attribute of leadership is confidence in the management, their social prestige. The hitherto existing controlling authority evolves from management to leadership. The managerial personnel becomes analogically transformed into leaders and thus leadership displays the ability to determine a development path, show a vision, organize creative teams in business.

Change management is the process which begins from the management, in other words the process of recognition, initiation and dissemination of a change is assigned to senior management whereas the burden to execute the change lies on middle- or first-level management. A change manager should be the leader of the change. The managerial roles and duties are very important because the manager is responsible for realization of tasks in time, their efficiency, exceeding the budget allocated for the change. The body administering the organization should at all times decide about the selection of a candidate for this post.

An internal environment of a business including qualifications and competences of middle-level managers becomes very important in the change management process. It makes it possible not only to broaden and disseminate knowledge, but also to strengthen relational resources, in consequence assuring access to specific assets determining innovative processes. The role of medium management levels is thus very special here.

In the years 2009-2010 the author had a possibility to observe and study the implementation of systemic changes aimed at the improvement of productiveness of movement maintenance processes (5 S and TPM) in 20 Polish industrial enterprises. The study showed that main factors retarding the implementation process and effectiveness of these changes were the lack of efficient leadership,

incompetence of assigning functions and duties, no teamwork, conflicts and the inefficient communication system.

Requirements set for managers in the businesses in that study depended on the nature of an analysed enterprise and needs of a given organization. The majority of enterprises, however, choose a manager who:

a) shows efficiency in strategic orientation,
b) identifies himself/herself with the enterprise, its mission and targets; is committed to problems and values of the business, and attaches importance to the corporate culture,
c) shows consistency in actions and the achievement of targets, gets along under conflict circumstances,
d) has good communication skills; attaches importance to proper conveyance of information and a dialogue in an organization,
e) appreciates rules of effective cooperation; is able to work in a group and with a group.

Managers who implemented the systems were mostly expected to have technical and methodological competences regarding such systems and the so called 'soft (social) competences'. Technical competences are understood as the knowledge of goals of the implementation of systems, tools and practical applications.

Methodological competences, in turn, are the knowledge of methods of decision making, conducting studies and problem solving, interpretation and visualization, creativity techniques, the ability to use standards, the knowledge of tools such as Pareto analysis, the Ishikawa Diagrams or 5Why.

Social competences are understood as the skill of cooperation in a group, the knowledge of team cooperation and communication rules, diagnosis of functions in a team, the skill of conflict resolution, motivating, team activating, assigning and control of the realization of tasks. The competences discussed herein are reflected in the rules of applied systems which are found in the majority of enterprises, i.e.:

- engagement of the enterprise management displayed by the identification of a mission, development paths and goals and the assurance of suitable resources for the achievement of such goals and building requisite organizational structures,
- teamwork through building small, autonomous groups of workers,
- being oriented at prevention through a search for and removal of reasons and potential threats,
- training and improvement of qualifications and skills by planning trainings, a correct choice of their programmes and practical methods of instruction,
- improvement of work methods.

The above studies also show **prevailing adhocracy processes**, in other words a great mobility and temporariness of functions and structural solutions with which organizations did not cope too well during the implementation of changes. Temporary, informalized organizational arrangements in enterprises, consisting in creating new functions and teams for the purposes of new changes and simultaneous holding of currently existing functions in an organization prove to be too burdensome for workers and they often lead to conflicts and chaos. Such situations require that managers should have skills of flexible adaptation to the change of parts, but simultaneously they are also conducive to effectiveness of the utilization of the human resource potential of the organization. There are few organizations which show professional preparation and synergy skills in flexibly created forms of an organization with maintenance of expertness and competence necessary for these processes. The flexibility of roles of managers becomes very important in today′s economy.

In the majority of organizations in the above study the process of influencing changes and activities related thereto was a responsibility of workers at different levels of the structure. Thus, for example the management, i.e. managers who are at the highest level in the hierarchy have a considerable influence on the occurrence of changes, but they seldom participate physically in the change implementation and management process. The situation is different in the case of the middle-level management – their participation in the change implementation process is very essential.

A senior manager (the management) concentrates on broad, general problems of the organization in a given field, achieves strategic goals, and therefore he/she must be a good visionary and strategist.

A middle-level manager achieves tactical goals set at the medium level, concentrates on the manner of preparing activities necessary to achieve strategic goals and thus he/she is a good coordinator and integrator.

Lower-level managers implement operational objectives which refer to short-term problems.

In the overwhelming majority of the organizations in the above study a middle-level manager is appointed to a position of the change manager (Fig. 1).

A classical example in an organization is hiring a new employee to hold the position of manager appointed to implement changes whose task will be to initiate a change and communicate the arrival of the change. An outside change manager to be in charge of the change is required for complex and long-term changes because this can be of importance when specialist knowledge and skills or prestige of a given person without any everyday operating duties are necessary. Individuals who are not members of their organization have a greater opportunity that workers will confide to them, listen to their advice and they will be able to formulate their unbiased judgements.

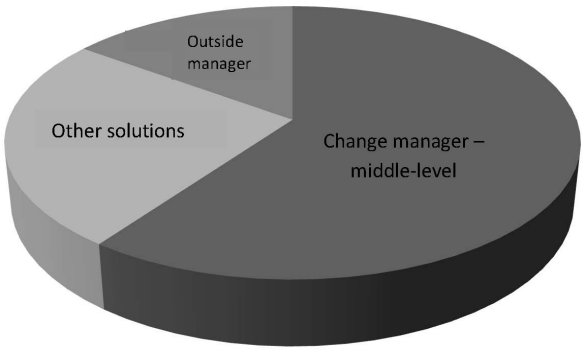

Fig. 1. Position of the change manager
Source: author.

A new manager is expected to have first of all moral courage for activity on the so called 'foreign ground', creating and articulating a new strategy in this respect, especially in organizations where changes are snowballing. One of the most serious errors made by the management in the status quo is their failure to participate in the change process and leaving a new manager alone to achieve the goals set by the organization. The shortage of knowledge about the business and its rules governing its operations as well as a weak recognition of the culture of changes in the organization by the new manager cause delays and poor efficiency of the change process. For the change to be successful the manager should participate in the change implementation process from the outset, however the change manager is often appointed during the implementation of the change.

At times a change managing team is very huge and it is composed of an outside manager, senior and middle-level managers, i.e. the board of directors and line managers working in the interest of the change, as shown in Fig. 2.
The organization of structural units for the implementation of changes depends on the change itself, its volume and nature.

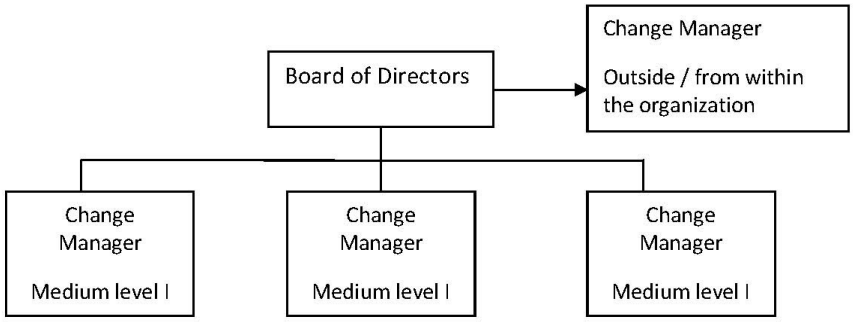

Fig. 2. The change managing team
Source: author.

The change manager has a lot of responsibilities which depend on many factors mentioned herein. Changes in the potential, organizational structure of the enterprise implementing the change are relative to the organization itself, an organizational stage, organizational culture of the enterprise and finally to the change itself, its specific nature, significance and volume.

The success of the implementation of changes in an organization is determined to a great extent by manpower management, the lack of errors made at building the structure of the organization as well as errors in the distribution of decision-making authority. Unfortunately, the selection of the personnel in many enterprises is rather more estimated than an analytical process. Many enterprises also fail to analyse thoroughly enough the competence of their own workers. There are also no developed competency profiles required for a given position. Enterprises where nobody analyses and improves their competences are worse at handling the change management process.

Changes in organizations can have the following characteristics: gradual changes – regular and irregular, radical changes sometimes causing some loss of stability of the enterprise.

Radical changes are very difficult to make, especially in employee teams, where competences of workers and their development are placed in a position of marginal importance.

Then radical changes give rise to many tensions in a team, even in these dynamic ones. The enterprise often has neither additional resources nor tools for such activities. Organizations which consciously build their innovative potential and experience changes on an everyday basis, even very small-amplitude changes, have a greater chance to survive. It can be ascertained that the change is a result of planning and designing or it is extorted by the environment and business competition. The former type of changes requires courage and leadership combined with a vision, whereas the latter one is related to an immediate reaction and leadership shown in quick decision making and initiative.

The nature of the change is of significant importance in the effectiveness of introducing changes and adaptation of leader's activities to the kind of an occurring change.

Unplanned changes require from managers to have decision making skills and show initiative, the ability to act in crisis, to handle conflicts, whereas during planned changes the leader is expected to have mostly time management and planning skills, indispensable in the implementation process. Imposed changes, in turn, require negotiation, cooperation and observation skills. The traits that characterize a voluntary internal change higher efficiency, knowledge of structures and rules inside a business. An external change is a thorough observation of the environment. Small precedent-type changes do not give rise to permanent effects, they usually occur as the result of simple organizational undertakings, whereas continuous changes require a great skill of creating and

working in a team, continued consequence and a systemic approach to the implementation of new solutions.

Setting motivating and adequate goals for oneself and workers, aimed at improving the quality of undertaken activities, is a competency not to be overrated. Through this competency a manager brings the team near the implementation of requirements which are put before workers.

Irrespective of positions held in an organization and tasks faced by employees, one of the most essential skills of a manager is the decision making skill. No matter what the circumstances, type and difficulty level of a change are, this skill is undeniably perceived as a huge advantage at a workplace. Regardless of the fact whether you are a line manager or the president of a big company, the success is the product of several factors and one of them, in addition to personality and other competences, is the ability to make repeatedly important and difficult decisions.

Definite results can be achieved in a variety of ways. Independent and effective decisions of managers are a significant advantage, but teamwork ability and leading teamwork often result in arriving at the best solution of the problem. Every change in an organization is introduced because of definite goals. Before any decision is made, you must know what you intend to achieve. The change should result from assumed goals.

No decisions in an organization can be made without suitable information. Change management in an organization requires information to be prepared, transferred and effective information management. Information is of great significance for making a choice.

Creative and perspective thinking is an advantage in the job of a manager. Even the smallest decisions can cause nontrivial results. Looking into the future and risk assessment are the skills urgently needed (Table 1).

Table 1. The most important skills of managers in the systemic change management process (author's study 2009-2010)

Manager's skills	
Power of influence	Referring to respected authorities and support on the part of accompaniers.
Decision making skill	Self-confidence. Manner of having a conversation. Staying focused on the core of the matter, great persuasive ability, lack and alleviation of conflicts, rational criticism and ensuring good atmosphere for negotiations. Decision making style. Intuition – a conscious choice – logical – decisions based on rational premises. Interest of the whole of a public not the result of personal ambitions.

Goal setting skill	Clearness of own endeavours. Real goals. Employees often oppose to changes, because they do not understand their goals.
Communication skills – meaning of information, arrangement of information, preparation and use of information	Upon announcing a change as much as possible information should be provided about it. Employees work better if they are well informed. Employees should be informed in advance about changes they will be involved in. It is often easier to change a group of people than an individual.
Creative thinking – perspective and strategic thinking	To integrate a change in the strategy of the organization. Requires analytical skills and creative thinking, intuition, reflections, ability to cope with paradoxes.
Assessment of possible solutions – risk calculation	Careful calculation costs and advantages connected with the selection of particular possibilities (variants of a solution). Maximum reduction of uncertainty. Avoidance of solutions entailing the risk of failure. Reliance mostly on external information as factors. Care for correct procedures of information processing. Careful evidencing of all the course of a decision process.
Planning – analysis and plan assessment	Changes are best introduced when as much time is spent on their planning as on their implementation. When possible, employees involved in changes should plan the rate of their implementation by themselves. Changes are best introduced when their plan is followed. People work best when they can affect the manner of the performance of a job.
Establishing relations and coping with conflicts	Compromise, creative problem solving through cooperation with an individual with whom we entered into a dispute. Employees are more inclined to accept a change if they know that the management is completely committed to it.
Inspiring motivation	Employees work best if they are paid for additional effort.
Delegation skills	Sharing authority and simultaneous control skill. Appreciating employee's qualifications and skills. Communication skills. A decision on who can be assigned a task depends on competence, skills and experience of a given person as well as on availability. Personality, position, priorities. Preparation, distribution, control.

Source: author.

A change without strong leadership and consistency in action will not bring prospective results. An increasing dynamics of transformations in the business environment causes that managers today have very difficult tasks to complete, consisting in the adjustment of changes to the needs of an enterprise as well as in the successful implementation of the change and, what is even most important, in anchoring the change in the organizational culture.

An effective change manager has a task to increase the probability of success and reduce the risk of the defeat of introduced changes as well as to accelerate the implementation of changes. A good manager can integrate change affected teams, diminish their resistance and assure their engagement. He/she cares for the development of employees, gives the impetus for changes, especially in difficult moments. He/she supervises and coordinates work, emphasizes effective communication, sets change effectiveness indices and creates a mechanism for the control of change effects. One of the most difficult activities of managers of all levels in an organization is the maintenance of the high level of encouragement (motivation) and engagement of workers under the circumstances of relentless and accelerating changes.

The sense of leader's own efficiency affects the frame of mind, undertaking and effectiveness of activities. Individuals with a low sense of efficacy are characterized with a tendency of feeling the fear, helplessness, anxiety and depression. Individuals with a high sense of efficacy can process information more quickly, they perform tasks much better, take up new challenges easier and set goals. They can also boast of more professional and educational successes. A high level of efficacy has a positive effect on tendencies to change behavioural styles through an increased belief that a given problem can be resolved. There is a growing motivation to formulate intentions and begin activities.

According to Kotter and Schlesinger there are six ways to overcome resistance to change used by managers, i.e.:

- Education and communication,
- Participation and involvement,
- Facilitation and support,
- Negotiation and agreement,
- Manipulation and co-optation,
- Explicit or implicit coercion.

In the change process more than one method of overcoming barriers to change can be used.

Table 2. Approaches to overcoming barriers

Approach	Commonly used in situations	Advantages	Drawbacks
Education and communication	Where there is a lack of information or inaccurate information and analysis.	Once informed, people will often help with the implementation of the change.	Can be very time consuming if lots of people are involved.
Participation and involvement	People who are interested in implementing change participate in the process.	People who participate will be committed to implementing change, and any relevant information they have will be integrated into the change plan.	Can be very time consuming if participators design an inappropriate change.
Facilitation and support	Alleviation of the change process where people are resisting because of adjustment problems.	No other approach works as well with adjustment problems.	Can be time consuming, expensive, and still fail.
Negotiation and agreement	Where someone or some group will clearly lose out in a change.	Sometimes it is a relatively easy way to avoid major resistance.	Can be too expensive in many cases if it alerts others to negotiate for compliance.
Manipulation and co-optation	Where other tactics will not work, or are too expensive.	It can be a relatively quick and expensive solution to resistance problems.	Can lead to future problems if people feel manipulated.
Explicit or implicit coercion	Where speed is essential, and the change initiators possess considerable power.	It is speedy, and can overcome any kind of resistance.	Can be risky if it leaves people mad at the initiators.

Source: John P. Kotter, Leonard A. Schlesinger, Choosing Strategies for Change, "Harvard Business Review", 1979, No. 2.

In order to meet enormous requirements and face challenges that are put before organizations today, a manager must create the climate which is not only favourable for attaining superb results, but also triggers pride and purposefulness of work in employees. The most effective employees have a vision of a future and a power to accomplish the vision, and first of all, to inspire others to achieve common goals.

The assimilation of changes depends to a great extent on the participation of the management of an enterprise, expressed by the mission statement, directions of development and goals, ensuring suitable resources for their implementation and creating requisite organizational structures. However, this is not easy, because the role of a leader of a change is an additional function in an organization – as a rule an employee also carries out other duties in an enterprise.

Competent managers should take into account change implementation steps in their actions. According to Kotler there are 8 steps in the management process:

1. Create necessity and urgency around the need for a change.
2. Form a powerful guiding coalition.
3. Create a vision for change.
4. Communicate the vision.
5. Empower others to act on the vision.
6. Create short-term wins.
7. Consolidate improvements and produce still more changes.
8. Anchor the new approach in corporate culture.

In every step of the change management model managers have different parts to play. Managers often concentrate on attaining short-term results, failing to attach importance to many factors which determine whether a change will end successfully and whether it was necessary at all. One of such factors is preparation of an the activity according to a chosen strategy. A lot of managers skip the change preparation stage and they spend too little time and fail to pay due diligence to preparing changes and, consequently, to anchor the new change in the organizational culture. It will not suffice to initiate a change in an organization and to carry out training. It is necessary to make that change work. A belief that the introduced changes were right, a thorough analysis of the condition before the change and readiness for the change are essential processes in the organization. One of the most important factors in change management is the introduction of new procedures and changes in the circulation in the organization and the verification whether the initiation was successful and whether the change has become the core of the organization and has been given a solid place in the organizational culture. Therefore, the efficient manager's part is of great importance here.

A modern manager leading the organization must supervise over an external and internal information flow. The leader, first of all, builds information resources of an organization and is responsible for an appropriate transfer to each target group. The manager controls and co-creates, along with nearest collaborators, an external and internal information system working efficiently. He/she performs an information role on the one hand, whereas on the other hand he/she is the author – creator of new messages. In consequence, the leader is able to accomplish exactly strategic goals of the enterprise and to contribute greatly to its development.

The most important tasks carried out by the manager today should also include the performance of a role of a negotiator resolving internal problems of the organization and arranging coherent positions with external partners. In this instance, firstly, the leader's communications tasks will be composed of actions mainly aimed at creating the internal consensus of the crew in respect of endeavours of the enterprise. The leader with managers of particular levels of the organization will act as an internal arbitrator resolving any disputes arising among employees by coordinating the order of tasks and assigning them to definite subordinates. Secondly, the manager is responsible for all negotiations with external partners of the organization. The leader is most often a party in negotiations, sometimes becoming a competent arbitrator settling external disputes in the social environment, in other words the manager performs the function of the so called 'independent specialist', negotiator whose high qualifications and communication skills are a guarantee of success in solving a conflict.

In and outside an organization contemporary managers perform a lot of communication functions which are supplementary to one another, i.e.:

- communication integrator,
- communication initiator,
- communication supervisor,
- communication coordinator,
- communication manager,
- communication leader,
- communication negotiator,
- communication representative.

These function interweave and supplement one another creating the communication characteristics of contemporary managers.

Managers in the organization operating towards a change have a task to build a culture promoting profitable changes in the organization and prompt commitment through activities and identification with introduced changes. The majority of changes in the organization take place as a gradual process and hence they require the ability to schedule tasks in time as well as availability and time

management skills which should be supported by an appropriate implementation plan. One of the most exacting tasks for managers participating in the change implementation process is building infrastructure which will make it possible to consolidate introduced changes in a long-term perspective (Fig. 3).

BUILDING A CHANGE – PROMOTING CULTURE
To prompt commitment
Change implementation time – time management skill
Identification of one's role in the change implementation process
Efficient communication – increasing the scope of changes
Managing change successively
Implementation of changes

Fig. 3. Building of a change-promoting culture
Source: author.

A foundation of an effective change is an understanding of organizational culture. If proposed changes deny the history and tradition of an organization, it will be difficult to find a solid place for them in the organizational culture. The majority of new operating methods become fixed in the organizational culture only at the last stage of the change process.

It is impossible to manage a desirable change in the organizational culture without diagnosing (examining) and identifying a desirable image of the organizational culture of an enterprise. The change management process in the culture takes a lot of time and requires the effort of corporate leaders. But only a change in the culture can ensure durability of changes.

It is known from practice that building an effective organizational culture is not easy and requires a lot of work, but it can bring unexpected results. The organizational culture has a substantial effect on the activity of an organization, it determines its members who endeavour to achieve intended results. Nowadays,

the organizational culture is a factor without which it no organization would be able to operate properly and therefore it is such an important task to learn about problems connected with the organizational culture.

If an organization fails to identify and develop its organizational culture, all changes may prove to be an unproductive cost and a waste of time. A manager should commence activities connected with the organizational culture already at the first stage of change implementation. Many organizations did not succeed to go through this period of changes only because their managers failed to pay a lot of attention to creating a favourable organizational culture.

An organizational culture in an enterprise is created by people at various levels of an organizational structure, from lower level employees to managers at higher levels in a hierarchy of authority. It is mostly managers who may influence the formation of such culture through their activities, personnel policy, management style and motivational processes. Senior management affect attitudes and behaviours of middle- and first-level managers in the organization whereas all managerial staff affect lower level employees.

An organizational culture though having certain permanent traits is subject to changes in consequence of changes within and outside an organization. The factors that shape the culture include external and internal elements such as environmental changes, crisis situations, social values, new competitors, new customers, a system change and internal impulses, i.e.: a need to identify or verify a strategy, an organizational change, changes within the management, identification of weaknesses of an organization, planned restructurings, etc.

According to Sylvia Pierzchawka the culture of an enterprise ought to be made a subject of planned transformations (not only evolutional ones).

Planned cultural transformations require that some conditions should be satisfied:

- senior management have to identify a vision of a future organization (identifying strategic goals) and characteristics of a desirable culture for the purposes of achieving goals,
- management have to be committed to a changes process, believe in the vision and convince other participants of changes by setting an example,
- a suitable system of communication among participants in the innovative process should be created, whereby all participants of the reorganization should have access to the information concerning them,
- people have to understand and think over the causes of cultural changes, what they mean to them and what they and the enterprise will gain from such changes,
- managers should support an appropriate personnel policy so that employees would be able to adjust themselves to a new culture (educating, training, incentive and appraisal systems, a recruitment system, promotion criteria, etc.

All the above factors must be combined to build a harmonious whole so that the process of cultural changes would be successful. The managerial staff can have an active effect on the shape of the organizational culture supporting innovativeness and introduction of changes by many activities being a practical enforcement of the abovementioned beliefs.

The knowledge and efficient changes of an organizational culture depend substantially on importance attached to these problems by top management and how those managers are committed to this process. In the foreseeable future a border marking a competitive advantage of an enterprise on the market will be the liberation of workers' energy, creativity and enthusiasm. To this end, it is necessary to have a strong leader, i.e. someone who would be internally coherent and reliable. This is all the more important, because it is estimated that approx. 70% operations which are performed in an enterprise during transformation processes, are actions related to leadership and not to management. Leadership skills, attitudes and behaviours and a management style can be a determinant of success of the cultural change process

The influence of the top management on the organizational culture may be clearly seen in young enterprises built from the ground up and managed by owners.

Conclusions

There is no ready and reliable method of an effective introduction of changes in all organizations, because each time we deal with another arrangement of variables, i.e. a strategy, management styles and methods, organizational structures and a culture which become modified following the introduction of changes.

When business is changing, a managerial role, becoming more difficult than it used be, is also changing. Requirements established for the management staff are not easy to comply with and therefore the development of managerial and personal competences is the foundation whereon every manager should build their career.

A manager introducing a change has several tasks ahead of him/her: assure success of change implementation (achieve assumed goals of the change; accomplish a change project according to assumptions), and assure the duration of introduced changes.

A lot of managers of Polish enterprises know that building an infrastructure which would allow them to consolidate changes on a long-term basis is not an easy task. The practice shows that without appropriate managers and control of implementation effects in many enterprises the previous situation will be reinstated, and changes will be treated as personal ambitions of some employees.

In regard to the fact that the human factor is decisive in the change management process, because the change never takes place in a ready and schematic manner and it does not lead to predetermined results. The change management process can be disturbed and delayed by **the lack of efficiency of employees including managers, lack of efficient leadership and a vision of an action, inadequate competences, information system inflexibility, lack of a well-ordered approach to change implementation**. The importance and role of a manager in the change implementation process will be all the more essential, because it underlies further economic growths, profitability and competitiveness of an enterprise.

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STRUCTURAL FUNDS FOR THE INCREASE OF COMPETENCES OF EMPLOYEES OF ENTERPRISE IN POLAND – THE DEVELOPMENT OF STAFF OF ENTREPRENEURS

Abstract

The quality of human capital in enterprises will have more and more influence on the size of the Polish economy. Currently, some branches of industry already lack in qualified employees, including management staff. Therefore, Operational Programme "Human Resources Development" will support the increase of employment and *social cohesion, among others by occupational activation, the development of adaptation potential of enterprises and their employees, an increase of the education level of the society, a decrease of areas of social exclusion and support of mechanisms of effective management in state administration. Support directed at enterprises and their employees will be provided in a wide range, especially for persons with low or out of date professional qualifications, in order to strengthen their potential and adjust their qualifications, including transfer support. All these elements are supposed to lead to a situation in which, after a completed support process, the Polish economy will become more competitive. In this paper, I would like to present the assessment of structural funds in the light of development of competences of the staff of entrepreneurs.*

Introduction

In the whole characteristics of Operational Programme "Human Resources Development", Priority II Development of Human Resources and Adaptation of Potential of Enterprises deserves special attention. It has one of the highest allocations of financial means intended for an increase of competitiveness, innovation and development of adaptation potential of enterprises through an

increase of qualifications of employees of companies and economic and social partners.

Currently, in the countries of old EU the tendency of transition from an economy based on work and capital to a knowledge-based economy, where information, know-how and information and communication technologies are the most important, is even stronger. Poland is still delayed in this scope, which is caused by an improper use or adjustment of human capital.

Challenges in the scope of technological changes in EU are connected with the necessity to invest in knowledge and skills of Polish staff of entrepreneurs', especially in SME sector. An active policy in the scope of staff education is an important element of the promotion of Poland as a place that is attractive for investors. It is necessary to strengthen the adaptation potential of enterprises through support of new solutions in the scope of work organization and forms of work performance. These activities aim at the improvement of competitiveness of enterprises and maintenance of current workplaces, as well as a balance between elasticity and competitiveness and safety of employment. A modern global economy requires more and more from the enterprises. The development of an enterprise, meeting the requirements of competition or maintenance of market position depend on human capital and identification of its needs. The determination of system frameworks which will enable the optimal use of adaptation potential and support of companies in the scope of employees' trainings is an important element of functioning of a system for entrepreneurship support. One also has to remember about proper adjustment of the training offer to expectations of entrepreneurs and persons who are about to start a business activity.[1]

The aim of this paper is to characterize and assess the structural funds in the scope of development of employees' competences as important sources of financing of various forms of improvement of qualifications of employees in Poland. This paper consists of two chapters. In the first chapter, terms of uman capital, social capital, qualifications and their importance in maintenance of strong position on the market will be explained. In the second chapter, I will describe the structural funds that have supported the development of human resources in the years 2007-2013, as well as operational programmes that have implemented them.

[1] Program Operacyjny Kapitał Ludzki, Opis priorytetów i działań, Warszawa 2007.

1. Human resources, level of education and companies development

1.1. Human resources definition

Human resources, next to financial and material resources of an enterprise, are one of the basic resources of an organization, and according to many contemporary theorists and practitioners of management – the most important of them. Human resources are composed of the whole team of persons who create the organization, starting from regular employees, ending with directors that manage the whole organization. Former management theories were not interested in the importance of human capital in an organization, emphasizing work efficiency, economical aspects of a business, functioning or use of modern machines and technologies in the production process. Nowadays, human resources are the central element of idea from the scope of social potential management, according to which they are the most valuable capital of an organization. As a term, human capital appeared already in the 18th century in works of the Scottish economist Adam Smith. The synonyms of human resources are: employees, human capital, staff, personnel.[2] However, as an economic term it appeared only in the late 1950s and 1960s. Theodore Schultz, while analysing the situation of underdeveloped countries, noticed that the achievement of well-being by poor people does not depend on the fact whether they own any land, machines, energy, but on their knowledge. He called this quality aspect of economy "human capital"[3]. Usually, human capital is defined as a combination of own inborn talents and abilities of individuals, and skills and knowledge that are gained during education and trainings (Sometimes, health is also mentioned). The world of business has willingly adopted the concept of human capital, but it usually treats it mostly as skills and talents of workforce that have a direct influence on success of a particular business or branch[4]. Human capital is completed with social capital, which enables more effective group activities. According to R. Putnam, social capital presents such qualities of society as trust and standards and connections that may increase the efficiency of society by facilitating the coordinated actions, but horizontal, not vertical connections within civil commitment are the most important. Networks of connections that are of informal, horizontal and personal character have a beneficial influence on economy[5]. Social capital facilitates the actions of individuals inside the structures and enables the achievement of certain goals, which

[2] Portal Rynku, *Pracy Słownik HR*, www.hrk.pl
[3] Fitz-enz Jac, *Rentowność inwestycji w kapitał ludzki*, ABC, 2001, s. 8.
[4] OECD Insights Human Capital: How what you know shapes your life Summary in Polish.
[5] R. Putnam, *Demokracja*, op. cit., s. 258 za M. Młokosiewicz *Kapitał społeczny i kapitał ludzki a kwestia ubóstwa*, [w:] D. Kopycińska (red.) *Kapitał ludzki w gospodarce*, PTE, Szczecin 2003, s. 94.

would not be possible without it. According to J. Coleman, a commonly shared value stating that everyone should resign from his/her own benefits and act for the benefit of society is an unusually strong social resource. Such rule, strengthened by social approval, status, prestige and other prizes, is a social capital that motivates people to work for public benefit.[6] The idea of analysing the social capital in the context of knowledge management is relatively young. It may be caused by the fact that it was overshadowed by other concepts that were focused on systemic solutions and solutions connected with the activity of an organization as a whole. People, processes and technologies were so often mentioned as the most important sources of organization effectiveness that many of us have forgotten about social mechanisms. One of the most important arguments for the consideration of human capital is the fact that if used properly, it brings positive results, which are the following:[7]

- More efficient sharing of knowledge – thanks to relations based on trust and common goals,
- Lower costs of transactions – thanks to a high level of trust and spirit of cooperation (not only within the organization, but also in contact with its clients and partners),
- Levelling of personnel changes, costs borne while dismissing employees, costs connected with employing and training the new ones,
- Avoiding stagnations caused by changes of personnel,
- Maintenance of valuable organizational knowledge,
- Better cohesion and complexity of actions thanks to understanding of goals and better stability of organization.

Social capital is located in civil commitment networks and is a moral resource. It has a direct influence on the quality of citizens' lives and economic results of enterprises in our country.[8] There are many definitions of human resource management. According to M. Armstrong, it is a philosophy of business concerning the management of people in order to use their possibilities, in order to outrival the competition and maintain a strong position on the market. In order to defeat the rivals, one has to invest not only in technology, but also in people[9].

[6] T. Grosse, *Kapitał jak katalizator*, CEO, 7 października 2002.
[7] M. Kowalkiewicz, *Zarządzanie wiedzą krok po kroku* (3), Gazeta IT, nr 9, 2005.
[8] A. Fazlagic, *Kapitał społeczny i zaufanie w Polsce*, Modern Marketing, nr 1, 2004.
[9] M. Armstrong, *Zarządzanie zasobami ludzkimi Strategia i działania*, Wydawnictwo Profesjonalnej Szkoły Biznesu 1996, s. 25.

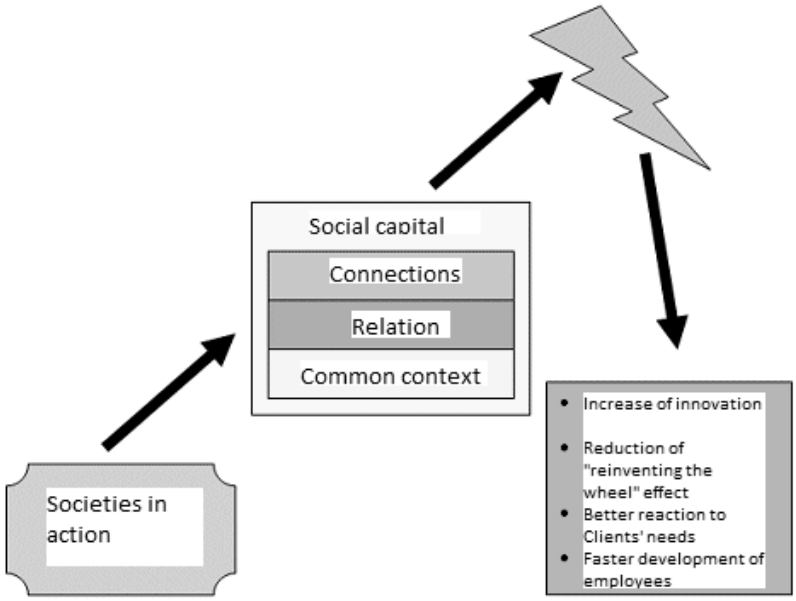

Fig. 1. Social capital
Source: M. Kowalkiewicz, Zarządzanie wiedzą krok po kroku (3), Gazeta IT, nr 9, 2005.

P. Drucker, American classic of management and organization theory, in one of his works presents seven basic qualities that characterize management. They are presented below:[10]

- Management concerns mostly people. Its aim is such cooperation of many people which enables the neutralisation of weaknesses and maximal use of talents and strengths of participants. People are the most important resource of organization.
- Management is deeply rooted in the culture. Individuals are participants of many cultures: national, regional, professional, organizational. Effective influence on other people requires the knowledge of cultures in which they participate and respect to these cultures. Change of an organizational culture is one of the basic conditions of efficient restructuring of post-communist enterprises.
- Management requires simple and understandable values, aims of action and tasks, uniting all members of organization. Values and aims should lead to their emotional commitment. Such ambitious tasks have the ability to mobilize

[10] A.K. Koźmiński, W. Piotrowski, *Zarządzanie. Teoria i praktyka*, PWN, Warszawa, 1996, s. 136-142.

people to effort even when they seem unlikely at the beginning. The especially suggestive examples are the ones of Japanese companies that in 1950s aimed at equalling the American giants, which seemed crazy at the time.

- Management should lead to the situation in which an organization is able to learn, to adapt to changing conditions and constant improvement of participants, which means acquiring new skills, possibilities and patterns of action. The role of a boss consists among others in providing the employees with access to information enabling the correction of mistakes and self-improvement.
- Management requires communication, meaning the circulation of information inside an organization and exchange of information with others.
- Management requires an expanded system of indicators enabling constant and comprehensive monitoring, evaluation and improvement of action. There are sets of commonly used financial, economical, market, technical and social indicators. The use of indicators enables not only to react to occurrences, but also to predict the course of events and take preventive measures. Management of each enterprise should elaborate their own set of indicators adjusted to its character by expanding the monitoring of particular areas of company's activity.
- Management has to be interchangeably oriented at the basic and most important final result, which is a satisfied client.

Human resource management is a strategic and coherent approach to management of the most valuable assets of an organization – employed people, who individually and collectively contribute to the realisation of its aims.

According to Storey's definition formulated in 1995 "management of human resources is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an array of cultural, structural and personnel techniques". According to M. Armstrong, human resource management may be viewed as a set of co-related actions that are ideologically and philosophically justified. It includes employment, development and awarding people in organizations, as well as the formation of proper relations between the management personnel and employees. All line managers and team leaders deal with these problems, but human resource management specialists have a crucial role to play here.[11]

The aim of human resource management is, generally speaking, enabling an enterprise to achieve success thanks to people employed in it. To be more precise, aims of HRM may be formulated in the following way: [12]

[11] M. Amstrong, *Zarządzanie zasobami ludzkimi*, Dom Wydawniczy ABC, Kraków, 2000, s. 19.
[12] Tamże, s. 19-20.

- provision of a wide range of services supporting the enterprise aims and constituting an element of an organization management process,
- finding and keeping qualified, engaged and well-motivated employees in the organization,
- increasing and developing inborn skills of people – their contribution, potential and ability to find employment – through provision of trainings and constant opportunities for development,
- creation of atmosphere enabling the maintenance of productive and harmonious relations between the management personnel and employees, facilitating the development of common trust,
- creation of conditions facilitating team work and elasticity,
- helping an organization in maintenance of balance and adjusting to the needs of various stakeholders, such us owners, governmental agencies or trusts, management personnel, employees, clients, suppliers and society in general,
- leading to a situation in which employees are appreciated and awarded for their work and achievements; consideration of differences in needs of particular people and groups of employees, their work style and aspirations,
- provision of equal opportunities to everyone,
- adoption of ethical rules of personnel management based on care for people, justice and clarity,
- maintenance and improvement of physical and mental condition of employees.

In present management, an individual is treated as a creative personality that has many possibilities which he/she wishes to develop and use. He/she wants to contribute to an organization and constitute its important part. The man is not motivated to act by willing to gain external awards, but by the desire of self-realisation. For human resource management on an appropriate level and in a proper way, it is necessary to[13]:

- elaborate a system of selection and promotions which should support the realisation of company's strategy,
- create an internal flow of personnel in order to achieve an easier adjustment to strategy requirements,
- filling single workplaces with proper people, so as to achieve a situation in which a useful person who is able to control and motivate him/herself works in a given position,
- present the postulate of equal treatment of issues connected with human resource management, e.g. marketing, finance or production to the management personnel.

[13] T. Pomianek, *Zarządzanie zasobami ludzkimi*, Wydawnictwo Wyższej Szkoły Informatyki i Zarządzania, Rzeszów, 2000, s. 15-16.

”Instruments used in human resource management evolve dynamically. This is why specialists in this field are forced to constant actualization and improvement of their workshop”.[14] Human resource management has certain, easy to define purposes, such as: enabling the management personnel to achieve their aims through skilful engagement of personnel, but in a way that fully uses their possibilities and skills. Not using all existing personnel skills is harmful, as it means that the organizational culture is low and most importantly, that the level of human resource management is insufficient. Engagement of employees in work requires often motivation, control of their action, which influences the entire organization, especially in the aspect of its functioning. For a better operation of an organization, human resource management shall lead to the release of hidden talents, innovation and willingness to flexible actions of employees.

In order for an employee to function properly in an enterprise, it is necessary to have a workplace chart or at least scope of duties. In medium or big enterprises, one or both of the above mentioned forms are used. In small business, there are no formalized duties connected with performed work. The proper development of employees should, according to employers, be connected with gaining experience, then forming skills, gaining professional and general knowledge and at the end increasing the level of skills that may be useful for the occupied job position.[15]

1.2. Development of employees' competences in company

From the term 'professional work' results the term 'professional qualifications', which leads to occupational preparation. Its result understood as "a set of qualities characterizing professional personality of an employee"[16] is described not only by sets of mental and practical skills determining correctness, purposefulness and efficiency of work, but also a positive motivation system and status of professional competences that give the highest value to qualifications (ibidem). Therefore, occupational preparation considered in categories of performance leads to the thesis that competences result from professional qualifications and decide on the quality of professional work. The word "qualifications" is derived from Latin language, from the word qualitas, it defines "quality, evaluation, education and preparation to performance of professional work".[17] Qualifications mean formal preparation for the performance of a certain profession or occupation of a certain post, reflected in graduation from a proper school, studies, courses, trainings, and gaining concrete skills during former professional work. The twin brother of competences, however

[14] M. Juchnowicz, *Narzędzia i praktyka zarządzania zasobami ludzkimi*, Wydawnictwo Poltext, Warszawa, 2003, s. 9.
[15] M. Kęsy, *Kompetencje zawodowe młodych*, Wydawcnictwo UJ, Kraków 2008, s. 82.
[16] Z. Wiatrowski, *Podstawy pedagogiki pracy*, Bydgoszcz, 2000, s. 242.
[17] *Słownik wyrazów obcych*, 1992, s. 627.

the more static one, basing on what he has already achieved, appreciating stability proven by a proper diploma. The difference is very subtle and not recognized by everyone. It may be said that qualifications are usually a good basis for the creation of competences. However, it is neither a necessary condition nor a sufficient one. Qualifications result from hard, long-term work, and competences are often connected with skills.[18] Professional qualifications are understood as a set of knowledge and skills required to realise the parts of professional tasks (in a chosen specialty).[19] In the Polish Classification of Jobs, Occupations and Specialities, there are two aspects of qualifications:

- Skill level – a function of the range and complexity of the tasks involved, where the complexity of tasks has priority over the range.
- Skill-specialization – type of knowledge applied, tools and equipment used, materials worked on, or with, and the nature of the goods and services produced.

The structure of classification is based on the system of terms, the most important of which are: job/occupations, specialization, occupational skills and qualifications. It results from grouping of jobs/occupations on the basis of similarity of occupational qualifications required to perform the tasks of a chosen job (specialty), with consideration of both aspects, i.e. their level and specialization. The above criteria were used for the classification of particular jobs and occupations in unit groups, which were then included into minor, sub-major and major groups.[20]

Table 1. Structure of major groups of classification and levels of classification

	Major group name	Number of groups in a major group			Number of occupations and specialties	Skill level
		Sub-major	Minor	Unit		
1	Legislators, senior officials and managers	3	6	33	43	-
2	Professionals	4	20	63	440	4
3	Technicians and associate personnel	4	17	69	313	3
4	Clerks	2	7	20	51	2 or 3

[18] *Słownik HR*, www.hrk.pl

[19] Rozporządzenia Ministra Gospodarki i Pracy **w** sprawie klasyfikacji zawodów i specjalności dla potrzeb rynku pracy oraz zakresu jej stosowania z dnia 8 grudnia 2004 r. (Dz.U. Nr 265, poz. 2644).

[20] Rozporządzenia Ministra Gospodarki i Pracy **w** sprawie klasyfikacji zawodów i specjalności dla potrzeb rynku pracy oraz zakresu jej stosowania z dnia 8 grudnia 2004 r. (Dz.U. Nr 265, poz. 2644).

5	Services and sales workers	2	7	21	77	2 or 3
6	Skilled agricultural, forestry and fishery workers	4	8	13	40	2
7	Craft and related trades workers	4	17	74	318	2
8	Plant and machine operators and assemblers	3	20	72	338	2
9	Elementary occupations	3	10	21	83	1
10	Armed forces	1	4	4	4	-
	TOTAL	0	116	392	1707	

Source: Regulation of the Minister for Economy and Labour on classification of occupations and specialities for labour market needs and its scope of 8th of December 2004 (Journal of Laws No. 265, Item 2644).

Four broad skill levels were included in the classification, similarly as in ISCO-88 and ISCO-88 (COM), which were defined in reference to education levels:

- The first ISCO skill level was defined with reference to ISCED category 1, comprising primary education (elementary qualifications).
- The second ISCO skill level was defined with reference to ISCED category 2 comprising middle school education and ISCED category 3 comprising secondary general school, secondary specialized school and basic vocational school education.
- The third ISCO skill level was defined with reference to ISCED category 4 comprising postsecondary school education and ISCED category 3 comprising secondary technical school education.
- The fourth ISCO skill level was defined with reference to ISCED category 5 comprising education leading to Bachelor's, Master's degrees or a postgraduate university education and category 6 comprising education leading to a PhD degree.

The particular major groups of jobs can be characterized in the following way: [21]

- Members of parliament, senior officials and managers. This major group includes occupations whose main tasks consist of determining and formulating government policies, as well as laws and public regulations, overseeing their implementation, representing governments and acting on their behalf, or planning, directing and coordinating the policies and activities of enterprises and organizations, or departments.

[21] Rozporządzenia Ministra Gospodarki i Pracy **w** sprawie klasyfikacji zawodów i specjalności dla potrzeb rynku pracy oraz zakresu jej stosowania z dnia 8 grudnia 2004 r. (Dz.U. Nr 265, poz. 2644).

- Professionals. This major group includes occupations whose main tasks require a high level of professional knowledge and experience in the fields of physical and life sciences, or social sciences and humanities. The main tasks consist of increasing the existing stock of knowledge, applying scientific and artistic concepts and theories to the solution of problems, and teaching about the foregoing in a systematic manner.
- Technicians and associate personnel – This major group includes occupations whose main tasks require technical knowledge and experience necessary to carry out technical and other work connected with the study and application of concepts and operational methods in the above-mentioned fields.
- Clerks. This major group includes occupations whose main tasks require the knowledge and experience necessary to organize, store, compute and retrieve information, record and compute numerical, financial and statistical data, and performing a number of customer-oriented clerical duties, mostly in connection with mail services, money-handling operations and appointments.
- Service and sales workers. This major group includes occupations whose main tasks require the knowledge, skills and experience necessary to provide protective services, personal services related to e.g. travel, housekeeping, catering, personal care and selling and demonstrating goods in wholesale and retail stores.
- Skilled agricultural, forestry and fishery workers. This group major includes occupations whose main tasks require the knowledge, skills and experience necessary to grow and harvest crops, fruit or wild plants, grow and exploit forest, raise and breed animals, catch or cultivate fish.
  Craft and related trades workers. This group major includes occupations whose main tasks require the knowledge, skills and experience necessary to extract and process raw materials, produce and repair goods and construct, preserve and repair roads, constructions and machines. The main tasks require the knowledge and an understanding of the nature of work, used materials, machines and produced goods.
- Plant and machine operators, and assemblers. This group major includes occupations whose main tasks require the knowledge, skills and experience necessary to drive vehicles and operate other mobile plant, supervise, control and monitor operating of industrial machinery and equipment on site or with use of remote controlling and to install products from components according to strict standards and methods. The performance of tasks requires mainly the knowledge and an understanding of the rules of functioning of machinery.
- Elementary occupations. This group major covers occupations which require simple or basic skills and small amount of theoretical knowledge necessary to perform usually simple and routine tasks involving the use of simple hand-held

tools and limited own initiative and evaluation. In some cases, it requires some physical effort.

- Armed forces. Members of this group are professional soldiers of permanent and contractual military service and conscripts enrolled for basic military training and re-enlisted military service.

Work that is well-adjusted to employee's qualifications means work that does not exceed them and during which these qualifications are at least used partially. It means that qualifications should be broadly interpreted.[22] Work should correspond with employee's qualifications. The term 'qualifications' mentioned in Article 42.4 of the Labour Code, means not only professional preparation of an employee – his/her formal education, gained professional experiences and necessary skills, but also psychophysical qualities of an employee, mental predispositions and the ability to perform certain activities in terms of physical health.[23] Besides occupational qualifications, there are also socio-moral and psychophysical qualifications, as well as medical requirements and contraindications. They constitute the scope of occupational qualifications[24] that are taken into consideration in the recruitment process. In many enterprises, competences concerning action are formed in the next phase).[25]

Table 2. Types of occupational qualifications

Non-occupational qualifications	They constitute the basic requirements necessary in each job, both in careers and in other occupations (e.g. social or household) and mean a positive attitude and proper physical condition. They also reflect basic skills of a practical and mental action. These qualifications do not prepare for any specific job and do not entitle to its performance.
General occupational qualifications	Qualifications characteristic for a certain occupational area, usually including a group of jobs.
Qualifications basic for a given profession	Qualifications specific for a certain occupation and including main skills necessary for effective performance of duties.
Specialist qualifications	Qualifications that determine additional skills, specific for a certain job, that should be identified with professional specialisations or special scopes of work.

Source: Nowacki T. Zawodoznawstwo. ITeE, Radom 1999 za prof. dr hab. S.M. Kwiatkowski Institute for Educational Research, Standards of occupational qualifications, employers' expectations, BEZPIECZEŃSTWO PRACY 3/2006.

[22] Wyrok SN z dnia 5 lutego 1998 r., I PKN 515/97.
[23] Por.: Wyrok SN z 4 października 2000 r. (I PKN 61/00, Pr. Pracy 2001/5/33).
[24] *Słownik pedagogiki pracy*, Warszawa, 1986.
[25] P. Koper, *Jak zarządzać personelem*, Poradnik Gazety Prawnej, nr 30, 2004.

Defining the diversifying competences that will show us behaviours that are typical of individuals achieving good results, enable us to create models of behaviours thanks to which it will be possible to train people with worse results in order to increase their effectiveness. Gaining better education and systematic broadening of knowledge is one of the requirements of a current job market.[26] According to the provisions of Article 17 of the Labour Code and Article 94.6 of the Labour Code, an employer is obliged to facilitate employees with improving their occupational qualifications. An employer is not obliged to train employees, but he/she has to facilitate it for them if they are willing to raise their qualifications (decision of Supreme Court of 25 May 2000, I PKN 657/99, OSNP 2001/22/660).[27] At the same time, according to Article 18^{3b} § 1 of the Labour Code, an employer is obliged to equal treatment of employees, which also concerns access to training in order to improve occupational qualifications. Exclusion during selection of employees for occupational training is treated as impairment of the equal treatment rule if the superior is unable to prove that he/she made the choice on the basis of objective criteria.[28] The scope and conditions on which an employer facilitates employees with improving occupational qualifications is regulated by the Minister of National Education and Minister of Labour and Social Policy Regulation of 12 October 1993 on rules and conditions of increasing occupational qualifications and general education of adults (Journal of Laws of 2006, No. 103, Item 472; No. 31, Item 216).[29] Increasing occupational qualifications and general education of adults means education in schools and higher education institutions as well as education, additional education and training in non-school forms, which include: postgraduate studies, courses, seminars, professional and specialist internships, vocational trainings, guided self-education. Increasing employees' qualifications may be performed, according to needs, in daily, part-time, extramural, guided self-education, extension or mixed systems. The selection of a proper mode of education is very important, as it determines the scope of benefits for an employee. Good employees guarantee the high quality of work, which influences profits gained by their employer.[30] Enterprises that want to stay on the market, at the same time maintaining a strong position or strengthening the current one, have to invest in trainings for their employees.

[26] *Kiedy pracownik uczy się na koszt pracodawcy*, Gazeta Prawna, nr 199, 2004.
[27] D. Cichocka, *Szkolenie pracowników*, Gazeta Prawna, nr 32, 2008.
[28] A. Giżejowska, *Przepisy o szkoleniu pracowników z komentarzem*, www.rp.pl/artykul/79559.html
[29] Tamże.
[30] *Podnoszenie kwalifikacji – obowiązki pracownika i pracodawcy*, Serwis Prawno-Pracowniczy, nr 31, 2004.

2. Structural funds for development of companies' staff

2.1. Structural funds in 2007-2013

The transition from an economy based on work and capital to a knowledge-based economy where information, know-how and information and communication technologies are the most important is connected with the necessity to invest in knowledge and skills of personnel of Polish enterprises. Therefore, it is necessary to strengthen the adaptation potential of enterprises through trainings, consulting, the support of new solutions in the scope of work organizations and forms of work provision, the support of mobility between sectors of science and economy. Activities in this scope aim at strengthening of enterprises' competitiveness and maintenance of existing workplaces. On the basis of experiences from the previous period, conclusions for a current programming period have been identified:

- provision of cohesion of legal solutions for co-financing or provision of alternative sources of co-financing,
- elimination of repeating and redundant elements of an institutional system,
- making procedures and implementation rules more flexible,
- avoiding segmentation of support,
- transfer of support for people to regional levels, especially in case of competition projects,
- need to clearly define the competences of particular institutions participating in programme realisation,
- necessity to provide an efficient system of financial flows,
- provision of efficient channels of communication, information and promotion,
- increase of flexibility in relocation of means by regional (wojewódzki – voivodeship) local administration authorities,
- flexible and wide definition of categories of people authorized to use help.

HC OP will continue the actions started within the framework of SOP HRD and Priority II IOPRD:

- support for systems and structures in the area of labour market, social integration and education,
- support for persons and social groups through the increase of competences of employees of institutions on the labour market, social assistance, teachers,
- helping unemployed persons, persons looking for work and threatened with social exclusion,
- adjusting qualifications of staff and employees of enterprises,
- actions aiming at an increase of the level and quality of education of society that corresponds with the needs of the regional labour market,
- support for restructuring processes,
- realisation of scholarship programmes,

- popularisation of knowledge transfer,
- continuing education of adults,
- development of enterpreneurship.

Within the framework of Human Capital Operational Programme, actions aiming at the adjustment of qualifications and occupational skills of employees to economy requirements will be financed within Priority II, Measure 2.1 Development of Modern Economy Personnel, Submeasure 2.1.1 Development of Human Capital in Enterprises – Competition Projects. Within this submeasure, the following types of projects will be realised:

- supraregional closed projects of trainings (general and specialist) and consulting for entrepreneurs (or groups of entrepreneurs) prepared on the basis of individual strategies of companies' development,
- national open projects of trainings (general and specialist) and consulting for enterprises and enterprises employees,
- postgraduate studies for entrepreneurs and enterprises employees.

The Polish Agency for Enterprise Development plans to support the projects of closed trainings which result directly from strategic plans of enterprises and comply with enterprise's directions of development. Within the framework of Submeasure 2.1.1 it intends to promote the projects which will support persons over 50 years of age, according to governmental documents (50 PLUS, KPDZ for 2008 and National Employment Strategy for 2007-2013). The purpose of the realised competition projects is the development of enterprises, meeting requirements of competition or maintenance of position on the market thanks to the increase of availability and adjustments of trainings to the enterprises' needs. The purpose will be achieved by supporting about 45 thousand enterprises which invest in training of their employees and increasing qualifications of 300 thousand employees of enterprises thanks to their participation in trainings. Competitions will be announced in the first quarter of 2008, first agreements on financing of the project will be concluded in the second quarter of 2008. For example: the first allocation for initial competitions for 2007-2008: Submeasure 2.1.1 – 278 million. Complementary with Priority II is Priority VIII HC OP – Regional Business Personnel. These two priorities differ mostly in terms of the scale of projects and regionalisation. Within the framework of Priority VIII, projects for one voivodeship will be realised, and they will be much smaller than in the case of Priority II.

The following two measures will be conducted within the Regional Business Personnel priority:

- Measure 8.1 Development of Employees and Enterprises in Region, which main purpose is the increase and adjustment of skills of persons working for the needs of a regional economy.

- Measure 8.2 Transfer of Knowledge which main purpose is the increase of transfer of knowledge and strengthening of connections between R+D sector and enterprises, aiming at the economic development of regions.

With regard to enterprise's possibility of use the funds, the focus was set on those submeasures that are available on general competition rules.

Within Measure 8.1 those are:

- Submeasure 8.1.1 – Support of Development of Occupational Qualifications and Consulting for Enterprises.
- Submeasure 8.1.2 – Support of Adaptation and Modernization Processes in the Region.
- Submeasure 8.1.1 – Support of Development of Occupational Qualifications and Consulting for Enterprises includes the following types of projects:
  - general and specialist trainings (open and closed) and consulting connected with trainings for management staff and employees of enterprises in the scope of: management, identification of needs in the scope of employees' qualifications, flexible forms of work, work organization, management of OHS, implementation of environmentally friendly technologies, use of communication and information techniques in a conducted activity,
  - consulting for micro, small and medium enterprises, including people who are self-employed, in the scope of finance, human resource management or accounting,
  - trainings directed at persons with low occupational qualifications or other working adults who are interested in gaining new, completing or increasing occupational qualifications and skills.
- Submeasure 8.1.2 – Support of Adaptation and Modernization Processes in the region includes:
  - help in the formation of local partnerships aiming at elaboration and implementation of strategies of economic change management at the local and voivodeship level,
  - support of employees going through an adaptation and modernization process in the creation and realisation of outplacement, including especially trainings and professional consulting,
  - increase of awareness of management personnel and employees of modernized companies through consulting and trainings in the scope of possibility and need of realisation of projects from the scope of support of conducted changes,
  - re-qualification trainings and consulting in the scope of selection of new occupations and gaining new occupational skills,
  - trainings and consulting for entrepreneurs preparing for the change of enterprise's profile of activity,

  - research and analyses of developmental trends and prognosis of economic changes in the region.

- Submeasure 8.2 Transfer of Knowledge also plans to increase qualifications of enterprises employees through the transfer of knowledge and strengthening the connections between research and development sector and enterprises.
- Submeasure 8.2.1 – Support for Cooperation of Science and Enterprises, includes:
  - internships and trainings for employees of universities and scientific units and scientific employees in enterprises,
  - promotion of academic entrepreneurship in order to commercialize the knowledge and skills of spin-off, spin-out team operating in higher schools,
  - trainings and consulting for employees of universities and scientific units, doctoral students, students and graduates aiming to establish a spin-off, spin-out business activity.

The expected result of the realization of Priority VIII activities is the support of 140 thousand of enterprises in the scope of training of their employees and support of 200 thousand employees in the form of trainings and courses. At the level of our voivodeship, the EU funds are managed by the Marshal Office in Łódź, which functions as an Intermediate Body of OP HC. A new organization unit was selected in the structure of the Marshal Office in Łódź – OP Human Capital Department, which aims at coordinating the implementation of the Programme in our region. The amount of money for Lodz voivodeship is about EUR 112.7 million.[31] OP Human Capital Department has already elaborated an action plan for 2007-2013 which includes the expected goals, a financial plan, descriptions of the selection of a system and competition projects together with a list of attachments required for the agreement on project financing. A schedule of announced competitions was also placed there. For example, for the first stage – 2008 for Measure 8.1 a budget of PLN 47,927,480 was envisaged, including PLN 38,334,393 for Submeasure 8.1.1. It is planned to train 1,600 adults, including 334 persons over 50 years of age, 334 persons endangered with negative results of restructuring. It is planned to train 15,997 persons till 2013 in Lodz voivodeship, including 3 335 persons over 50 years of age and 697 persons endangered with restructuring.

[31] Informacja dla mediów Nowe fundusze unijne na walkę z bezrobociem, czyli jak będzie wdrażany Europejski Fundusz Społeczny w Łódzkiem przez kolejne 6 lat, Łódź, 30 sierpnia 2007 r.

Conclusions

Social and human capital, which is a part of intangible assets of an enterprise, contributes to a better use of work resources and supports the growth and competitiveness of economy. Good education, gained qualifications supported with skills also enable easier adaptation to dynamic environment. Education is the easiest way to increase the owned capital.

The EU, within the structural policy, supports human resources from the European Social Fund. It supports individuals and social groups through the increase of competences of employees of job market institutions, social assistance, teachers, support of jobseekers and individuals endangered with social exclusion, adjustment of qualifications of personnel and employees of enterprises. It also supports systems and structures in the scope of labour market, social integration and education.

The analyses of programme (operational) documents, defining the aims and main directions of spending financial means from structural funds in particular periods of programming, lead to the conclusion that there are great possibilities of financing personnel development with the use of the European Social Fund. It concerns both direct support of enterprises through grants for trainings and consulting and indirect support in the form of financing the trainings for employed people, who want to increase their occupational qualifications on their own.

In current perspective, there are almost four times more means to be used than in the old perspective. Two-thirds of these means will be implemented directly by local authorities. Simplified application and realisation procedures let us hope that such considerable means will be absorbed more efficiently than in the previous period. Studies show that the majority of participants of trainings, especially from the SME sector, participated in such trainings for the first time, and they stated that it was caused by lack of funds for this purpose. In the current period, the EU structural fund will certainly influence the increase of employment rates of particular support groups and better adjustment of their qualifications to the labour market.

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COMMUNICATION COMPETENCES OF MANAGERS IN THE TWENTY FIRST CENTURY

Abstract

Communication competences of a manager in the 21st century have a significant effect on the creation of a competitive advantage of an organization. They compose an immanent part of behaviours of all persons in an organization responsible for producing the pro-effective culture. They create efficacy, that is effectiveness and efficiency in the realization of its basic aims targets. They affect proper functions of all essential structural units of organizations. Their implementation requires inter alia a heuristic approach to interpersonal communication processes in an organization. Therefore, they can be guided by the following principles:

1. *principle of communication dualism – awareness of process ephemerality and multithreading,*
2. *principle of communication intelligence – adaptiveness of communication,*
3. *principle of taking into account situational and socio-cultural contexts,*
4. *principle of individual personality features of partners in the communication process,*
5. *principle of skilful usage and reading of verbal expressions and non-verbal signals,*
6. *principle of utilization of knowledge and experience adequately to the situation,*
7. *principle of high-level ethical behaviours,*
8. *and principle of self-control.*

''The care for the maintenance of a whole composed of different elements leads quickly to awareness of this truth that various elements happen to be important for the object of this care to a different degree. The degree of importance of a given element of the whole is relative to two things: to what extent the lack of this element or its damage will make it difficult for the whole

to function, and what great difficulties will be presented by a replacement of this element in the case of its lack or a repair in the case of its damage."
Tadeusz Kotarbiński[1]

1. Introduction

Present socioeconomic transformations are characterized by a significant increase of the meaning of intangible assets of industrial organizations[2], i.e. all these assets where a simple economic classification is difficult to use and which are generally referred to as intellectual capital.[3] A basis forming this capital is the accumulative information in an organization, in other words the knowledge of managerial personnel and workers contributing to gaining a competitive edge as a result of synergy processes. This knowledge is interiorized information which workers committed to the organization gain through various forms and kinds of interpersonal communication. Especially in the organizational environment interpersonal communication with its various forms and kinds plays the leading part, because it is the most important element of correct performance of all functions in its activity. It appears at each stage of organizational operations beginning from giving an order and finishing with creating an organizational strategy. It is one of the most important factors triggering the engagement of workers and it is an immanent element of the whole – the organizational culture. Managerial personnel are in this instance one of the most important elements creating the pro-effectivity organizational culture through effective and efficient communication behaviours. Correct (effective and efficient) organizational operations on the market depend on their abilities and communication competences to a considerable extent.

2. Communication competences of a manager in a modern organization

Each organization is a specific, unique social system created by interpersonal communication to a great extent. Like every system, it has a more or less original organizational structure which reflects formal arrangements of communication networks and an informal communication system beyond any control which undergoes continuous transformations contrary to the former one. It is a unique

[1] Kotarbiński T., *Traktat o dobrej robocie*, Zakład Narodowy im. Ossolińskich, Wrocław 1982, s. 188.
[2] Kunert O., *Budowanie kompetencji innowacyjnych wyzwaniem rozwojowym polskich przedsiębiorstw*, Wydawnictwo Politechniki Łódzkiej, Łódź 2008, s. 9.
[3] Edvinsson L., Malone M.S., *Kapitał intelektualny*, PWN, Warszawa 2001.

communication "blood circulatory" system in an organization and like this system, it is at times patent, i.e. efficient, and from time to time it has problems with delivering information to a place of destination, thus resulting in different kinds of organizational problems, which unfortunately is not affected by a formalized communication system being rather a formal base – a pattern of communication among workers where "a situational and interpersonal context" should be given by the latter arrangement.

Managers should fulfil a double communication function in an organization. On the one hand, they should be the ones who perform managerial tasks as a result of their positions and titles held in an organization through just so and not otherwise constructed communication procedures and on the other hand, they should be leaders with personal authority that would enable them to establish informal relations with subordinates. The achievement of this kind of communication efficiency is a guarantee of effectiveness and efficiency in their actions. On the one hand, this is determined by three basic criteria characterizing a communication process, namely the principles of reciprocity, intentionality and reflexivity[4] and on the other hand, motivation, knowledge and skills of the sender and receiver.[5]

The correct communication amongst people is plausible only provided that specific reciprocity takes place which makes it possible for partners to exchange and interpret messages properly. Reciprocity should be merged with problems of motivation – an intention to communicate which is a rudimentary condition of a proper communication process. To make communication possible, you should want to achieve it with someone irrespective of whether you like or dislike this person. This is the main foundation of negotiation processes where the correct usage of communication rules is an absolute necessity.[6]

Intentionality in communication is in other words an assumption that every human communication process is to a smaller or greater extent a phenomenon based on the analysis of intention. A classical question referring to this feature of communication is as follows: *what did you mean by this?* It refers to the recognition of your speaker' s intentions which are not always explained verbally and sometimes they require an attentive observation of non-verbal behaviours. Intentionality of communication is underlined by its dynamic character.[7] In this case the knowledge of subjects communicating with each other becomes a basic factor enabling the correct interpretation of delivered information.

[4] Merten K., *Kommunikation*, s. 74-86.
[5] Morreale S.P., Spitzberg B.H., Barge J.K., *Komunikacja między ludźmi. Motywacja, wiedza i umiejętności*, PWN, Warszawa 2007, s. 65-88.
[6] Fisher R., Ury W., *Dochodząc do tak*, PWE, Warszawa 1991, s. 33.
[7] Merten K., op.cit., s. 77.

Reflexivity of communication is *conditio sine qua non* of all processes described by this name. Every interpretation of a notion of communication assumes its reflexivity. It is at times reflexivity which is postponed, delayed in time or only potential. This is, however, a basic foundation whereby communication is a process absolutely implying reflexivity.

A praxeological interpretation of communication competences of a manager puts a special stress on matters related to the conveyance of a message as information. T. Kotarbiński describes the following qualities facilitating information[8]:

- speed,
- accuracy – authenticity,
- proper specificity,
- talents of receivers,
- legibility,
- definitenessk,
- and understanding of information.

An excellent exemplification of presented praxeological rules of communication is a "just-in-time" approach as a management method in present organizations. In general, its foundation is a spatiotemporal perfection of a production process which is impossible to be carried out without a satisfactory use of the above-mentioned qualities – rules of the transfer of information. Any violation in the implementation of these rules leads to significant difficulties in an effective activity of an organization.[9]

The qualities presented hereinabove underlie effective and efficient communication, i.e. the process of passing a message. They characterize fundamental competences – skills of partners in this process[10]: "… with reference to the communication process it becomes reasonable to consider the term of competency in the aspect of skills and not as characteristics of such features of functioning of a subject (or also a subject himself/herself) which can be defined as competent". Communication competences of managers are, in other words, their specific skills, behaviours, predispositions and any other actions aimed at the effective implementation of managerial functions. It can be assumed that "a general model of communication competence refers to all elements of the

[8] Kotarbiński T., op.cit., s. 205.
[9] Bartochowska D., *Building of Competencies of Maintenance Employees in Managerial Positions*, s. 133-149, in: *Competencies as constituent of success of modern company*, edited by: Kunert O., *Foundation for Competence Promotion*, Łódź 2011.
[10] Winkler R., *Komunikacja interkulturowa w organizacji*, [w:] Potocki A., Winkler R., Żbikowska A., *Komunikacja w organizacjach gospodarczych*, Difin, Warszawa 2011, s. 231.

process a person goes through to communicate competently".[11] The analysis of the communication process is in this instance a fundamental source basing on which we are in a position to recognize and characterize communication competences of participants.

3. A complex, heuristic model of the communication process

In most analyses the communication process in an organization is interpreted on the basis of a classical concept by C. Shannon and W. Weaver[12] and its psychosocial interpretation carried out by D. Katz and R. Kahn.[13] A basic interpretative foundation of communication in this meaning is its acknowledgement as a purely technical, linear process where all elements and causal relationships between them can be exactly specified. The communication model interpreted as above is as follows (Fig. 1).

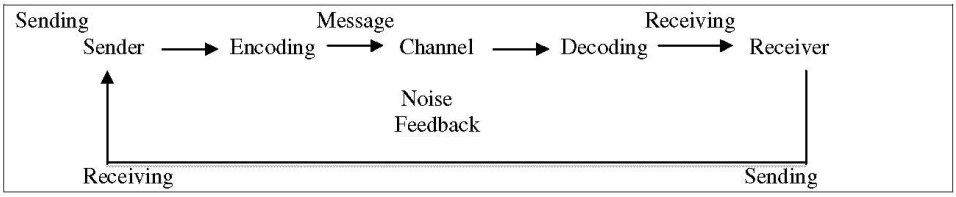

Fig. 1. A communication process model
Source: own study based on: Stoner J.A.F., Freeman R.E., Gilbert D.R. Jr., Kierowanie, PWE Warszawa 2001, s. 509.

The model presented above (univocally referring to the prototype by C. Shannon and W. Weaver) determines very conventionally the most essential stages of the communication process as a diagram. It does not take into account e.g. a cultural specificity of a given environment and its influence on the communication process and individual predispositions of partners who can form a communication act favourably or unfavourably to a great extent. Especially in organizations, communication behaviours of people working there can be often found only within them. They are characterized mainly with specific verbal phrases, e.g. technical terms and non-verbal messages related to activities carried out in such places. An organization is a place where the so-called 'professional languages' are created. They are understood only by people who know the definite notional symbols and the specific nature of a given occupation Therefore, the analysis of the communication process in an organization should

[11] Compare: Morreale S.P., Spitzberg B.H., Barge J.K., op.cit., s. 88.
[12] Shannon C.E., Weaver W., *The Mathematical Theory of Communication*, University of Illinois Press, Urban 1949, s. 5.
[13] Katza D., Kahna R., *Społeczna psychologia organizacji,* PWN, Warszawa 1979.

take into account the whole spectre of problems which include but are not limited to the matters of culture, motivation, individuality and personalities of workers as well as situational factors changing through time. Assuming that communication processes in an organization are an element of prevailing interpersonal behaviours of persons forming and working there, it seems to be necessary to extend the idea of interpretative problems of communication amongst people.[14]

The complex model of the communication process in an organization, first of all in the heuristic manner and so far as it is possible in the presentation of a continually evolving spatial process, should explain and specify basic features of human communication. It should be perceived as a process happening in the definite environment – specific space-time in which all 'vectors' are equally responsible for its correct course and time becomes a basic dimension defining its framework and ephemerality.[15] Remembering this specific feature of the communication process we should be aware that no model will fully reflect all of its characteristics, because its features are governed by the ancient Greek theatre, namely the rules of three unities, i.e. of time, place and action. Taking into account this fact we should bear in mind that every model which we will develop will not meet the requirement of the holistic paradigm. Instead, it will be a specific example of current knowledge on a given topic. First of all, this model should take into account the impact of the environment on the communication process and the characteristics of personalities of participants. (Fig. 2).

An interpretative basis of the process as approached herein is the foundation that every act of communication begins from the qualification of its aim which is contained in the following basic analytical questions: what is the reason for beginning a conversation, what its content will be, how messages will be delivered, whether there are any favourable circumstances to deliver messages successfully and whether a partner will accept activities connected with the intention to establish communication. Similar questions are often asked especially in an organization where structured forms of communication are of great importance and at the same time they limit the freedom of entering into a conversation. Formal communication requirements in an organization force participants of this process to abide by strict and agreed procedures which, in the majority of cases, are the internal environmental standard, i.e. the specific communication context. For example, a conversation between a teacher and

[14] Woźniak J.W., *Communication skills of managers*, s. 47-74, in: *Competencies as constituent of success of modern company*, edited by: Kunert O., *Foundation for Competence Promotion*, Łódź 2011.

[15] Woźniak J.W., *Selected Aspects of the Communication Process in the Modern Society*, s. 49-60, in: *The importance of company competence in the strategy of innovative development in the European Union*, edited by: Kunert O., *Foundation for Competence Promotion*, Łódź 2009.

a pupil at school, at college, or in an enterprise requires the use of suitable polite forms (Mr X [Professor X], Mr X [Director X], Mr X [Manager X] etc.) and standard communication behaviours (who has to begin a conversation, who and when can shake hands as the first one, what the order of delivery of information is, etc.). These environmental rules underlie most communication processes in organizations and specific groups. Any behaviours discordant with these rules result not only in disapproval shown by a partner of the conversation, but they invoke organizational sanctions. Thereby, it is advisable to take into account the characteristics of the environment and sender's personal qualities in the organizational model of communication.

The general model of the communication process in an organization presented above (Fig. 2) takes into account two interpretation trends which have an essential effect on the process. The first one refers to E. Hall's idea of communication where it is assumed that *"What has changed, developed and what is characteristic of humans and gives them their identity irrespective where they were born is their culture, the total communication framework: words, actions, postures, gestures, tones of voice, facial expressions, the way one handles time, space, and materials, the way one works, makes love, and defends oneself. All these things and yet many others create certain communication systems having meanings understandable exclusively for these who know the historic, social and cultural context of behaviours"*.[16] In other words, in this trend it is assumed that communication amongst people is possible only as the communication of cultures. Human behaviours are interpreted in this case as a historic, social and cultural whole. There is a compact interdependence between culture and the man – on the one hand culture creates the man whereas on the other hand the man creates culture.[17] Thus, in compliance with the above assumptions a communication model in an organization should take into account the characteristics of the sender's and receiver's social and cultural environments. For example, environmental differences between the languages used by the sender and receiver may be the reason for serious misunderstandings in the interpretation of delivered messages. People using the so called 'limited code' (e.g. having some difficulties with understanding of abstract expressions) are not always in a position to understand their partners correctly who use a fully developed code, characterized with great proficiency in the usage of ambiguous and abstract expressions.[18] For instance, production line workers in their conversations with a specialist from the accounts department may have problems with understanding his/her technical phrases, whereas unskilled workers will not

[16] Hall E., *Poza kulturą*, PWN, Warszawa 1984, s. 82.
[17] Ibidem, s. 54.
[18] Por.: Bernstein B., *Odtwarzanie kultury*, PIW, Warszawa 1990, s. 271.

be able – without earlier preparation – to interpret correctly the diagram of the wiring or water supply and sewage systems.

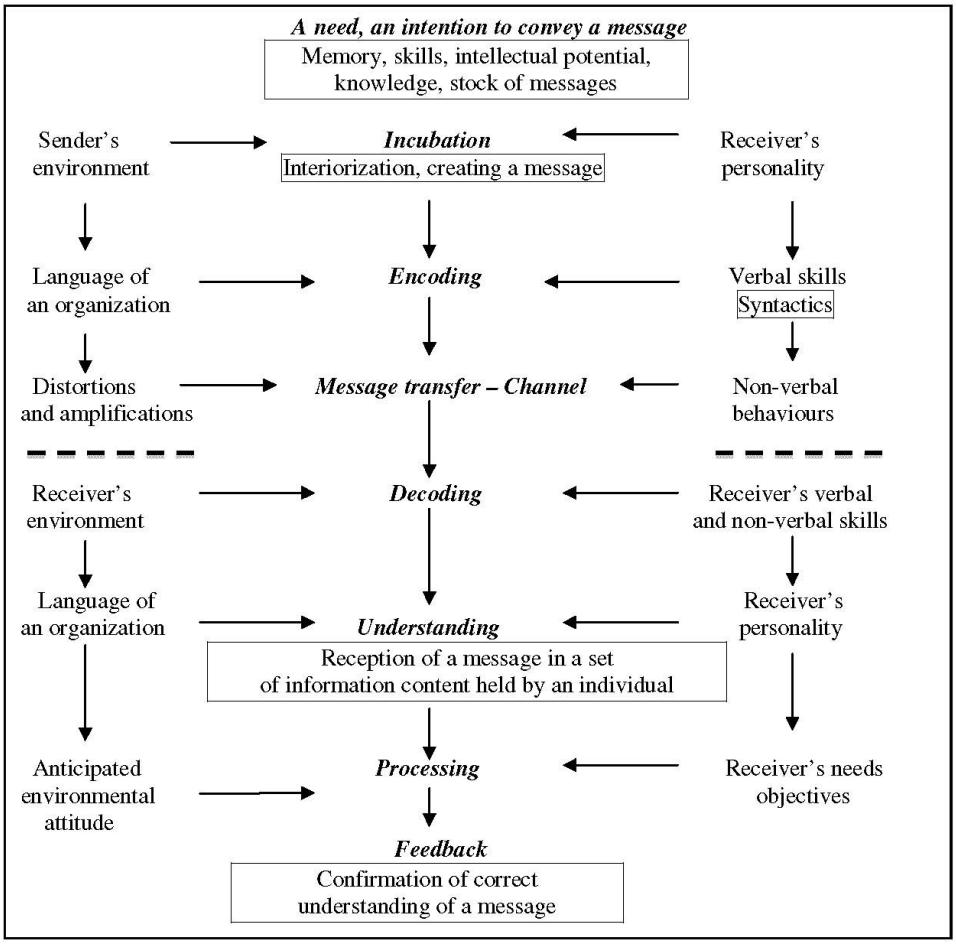

Fig. 2. A complex model of a communication process in an organization
Source: own research.[19]

The other interpretation trend refers to personality features and intellectual abilities of partners in the communication process. It is mainly linked to E. Goffman's idea who believes that *"an individual appears in the presence of*

[19] Compare: Woźniak J., *Problemy zarządzania komunikacją interpersonalną w organizacji*, [w:] *Globalizacja i integracja gospodarcza a procesy restrukturyzacji i rozwoju przedsiębiorstw*, red. Borowiecki R. i Jaki A., Akademia Ekonomiczna w Krakowie Katedra Ekonomiki i Organizacji Przedsiębiorstw, Warszawa – Kraków 2003, s. 318.

others and organizes a show for an audience"[20]. The individual will have to act so that he intentionally or unintentionally expresses himself, and the audience in "the theatre of everyday life" will, in turn, have to be impressed in some way by him. He comes to play specific roles imposed by life. And thanks to socialization which consists in learning some 'routines' characteristic of a given role, he is able to play every part where he becomes a co-participant.[21] Personality is a specific bunch of social parts, temperament, biological conditions and social predispositions of the man: "*Personality is what a man really is"*.[22] Every interpersonal communication is a specific reflection of not only the store of information of a man but also of human personalities.

In every communication act we deal with at least two partners whose personalities are characterized with a definite intellectual level. Accordingly, their abilities in respect of perception of verbal and non-verbal information can be considerably diverse. Therefore, in every interpersonal communication act personal qualities of partners should be taken into account and adjusted to their perceptive abilities. Egoism, altruism, self-confidence, obstinacy and resoluteness, ambitions, stress tolerance or assertive attitudes are only some of the features which have a significant effect on our communication behaviours. The frame of mind can also become a factor disturbing communication. Other elements making communication difficult especially in an organization are specific disturbances connected with architectural, spatial and physical conditions of the work environment. Under such circumstances it turns out that during the interchange of information the use of feedback facilitates significantly communication, i.e. the manageability which K. Merten describes as follows: "*Reflexivity seems to be this criterion facilitating the communication process which is contained in all other communication criteria"*.[23] Reflexivity makes it possible for partners to interpret delivered messages correctly and it is displayed both in verbal and non-verbal behaviours. In extremely formalized and structured organizations reflexivity is sometimes limited – in connection with formal requirements – to non-verbal forms (e.g. in the army). It turns out, however, that even under such circumstances, partners are able to interpret messages correctly by means of non-verbal techniques and to realize the rule of reflexivity.

[20] Goffman E., ,*Człowiek w teatrze życia codziennego*, PIW, Warszawa 1981, s. 54.
[21] Ibidem, s. 118.
[22] Compare: Allport G., *Personality: A psychological interpretation*, Rinehart and Winston, Holt, New York 1937; Strelau J., *Temperament – Personality – Activity*, Academie Press, 1983; Parsons T., *Theories of Society*, The Free Press of Glencoe, New York 1961.
[23] Merten K., op.cit., 1972, s. 88.

The need for information is another essential element having an impact on the communication process in an organization.[24] It is often disregarded especially by those who because of their positions in an organization possess such information. In most cases an informed worker works more efficiently, because information is one of the factors increasing self-esteem of a subordinate. The fact that the employee was informed means positive appraisal of his work and the role he performs in the organization. The need of information also refers to individuals managing the organization. In this case it is a requisite element in the managerial decision making. However, it turns out that there are still managers who are not aware of their information needs: *"Managers responsible for repeatable strategic decisions as a result of their positions were not only unable to identify information as the basis for making a specific decision and the development of an analysed strategic programme, but also to identify information needs consequential from making other types of repeatable strategic decisions"*.[25] Awareness of the essential part of the information in the decision making process and, accordingly, in creating a competitive edge, seems to be something in this context what contemporary managers do not always bear in mind.

The complex communication model in an organization presented above is an attempt to provide a holistic approach to this problem and, at the same time, to identify key communication competences of those who take part in this process, i.e. of senders and receivers. The sender, as a competent originator of the process is responsible for the preparation and delivery of a message, so that the receiver could interpret and rearrange it quickly and correctly and to send reflexive information. Therefore, sender's basic tasks – competences include as follows:

- awareness of the necessity to engage in the act of communication,
- possession of knowledge about the object of communication,
- initiating the act of communication,
- identifying the range of information provided for transmission,
- syntactic adaptation (grammar forms) of one's language to lingual preferences of the receiver;
- identifying the hierarchy of information,
- choice of place and form of delivery of a message,
- controlling one's emotions,
- controlling one's expressions,
- overcoming the distrust of the receiver,
- and controlling the course of communication.

[24] Compare: Penc J., *Komunikacja i negocjowanie w organizacjach*, Difin S.A., Warszawa 2010, s. 96-109.

[25] Sopińska A., *Podstawa informacyjna zarządzania strategicznego w polskich przedsiębiorstwach*, [w:] *Organizacja i Kierowanie* nr 2/2000, s. 78.

It must be noted here that the sender being the originator of the communication process is responsible for its correct course, the elimination of distortions and making possible for the receiver to utilize the feedback effect.

Generally speaking, the basic assignment of every sender in the communication process in an organization is the elaboration of the specific kind of a communication community, i.e. convergences in the interpretation of a given situation. E. Goffman writes: "*A definition of the situation projected by an individual is an integral part of the projection made and maintained by the close cooperation of more than one participant*".[26] Success in the communication process is possible when the actor's and spectator's definitions of a situation are compatible.[27]

A receiver in the communication process should first of all have the following skills – competency behaviours:

- show an open communication attitude,
- listen actively,
- interpret the information on an ongoing basis,
- classify it properly,
- explain potential inaccuracies which occur during the transmission,
- observe sender's non-verbal behaviours,
- watch sender's emotions,
- control own emotions,
- overcome any potential distrust towards the sender,
- define a situation correctly,
- and seek conceptual isomorphism (compliance in the interpretation of information).

The interpersonal communication process will run correctly only and exclusively when the sender and receiver show mutual interest in its continuation and participate in it aiming to give it a shape and form that would be interesting for them. If one of them does not show any interest in the information provided by the other one, the efficiency of the communication act is small. This also happens although there is a situation where the sender and receiver use a similar or even identical code of notions. Without any mutual interest the efficiency of the process will be minimum. Similar results will occur when the receiver incorrectly interprets a situational context or sender's gestures reflecting his/her emotional attitude. The misinterpretation of non-verbal transmission often leads to a wrong reception of information.

An essential act in the communication process especially in organizations which is decisive for a final effect, is encoding, i.e. the way a message is

[26] Goffman E., op.cit., s. 124.
[27] Ibidem, s. 41.

formulated by the sender to make codes with their corresponding symbols and images become correctly interpreted by the receiver. The use of an inadequate code by a manager giving an order has not only consequences of the verbal nature, but it also results in disturbances in the operations of a given structural unit of an organization.[28] Therefore, some theoreticians of communication, including E. Hall, B. Bernstein, and many others assume that encoding is the most important act in the communication process, and the knowledge of definite codes and rules of their usage by the sender and receiver is *conditio sine qua none* of its efficiency. One of precursors of this kind of interpretation of the communication management process is B. Bernstein, already mentioned hereinabove, who defines the notion of a code as follows[29]: "*A code is assimilated in a hidden manner as a regulative rule which selects and integrates essential meanings, forms of their realization, the creation of contexts"*.

In other words, the correct selection of a code is combined with suitable matching of meaning and words (information), with the use of correct rules of their usage (e.g. grammar forms) and with taking into account a definite situational context, i.e. specific features of a situation and the characteristics of the receiver.

The context of communication is determined by definite social relations where, according to B. Bernstein, two communication rules prevail[30]:

a) *interaction rule: it guides the choice, organization and rhythm of communication – oral, written or visual, and also the position, attitude and clothes of participants,*
b) *location rule: it governs a position in its physical sense and a form of its realization, this is a range of objects and their features, their mutual relations and a space where they are found.*

These rules define essential conditions of the realization of communication acts in smaller structural units of an organization and they set basic features of a context, enabling senders and receivers to use correct interpersonal behaviours. The first rule of the rules is related to determining basic conditions of the realization of the communication process and hence to the choice of the manner, forms, sequence and time of the transfer of information. The second rule, instead, refers to the choice or description (recognition) of the place where communication takes place and determining mutual relations between objects and individuals as communicators. It is also responsible for the qualification of spatial and technical circumstances of the communication process. Both of these rules, being mutually complementary to each other, make it possible for senders

[28] Hall E., op.cit., s. 95.
[29] Berstein B., op.cit., s. 222.
[30] Ibidem, s. 246.

and receivers to plan and execute a communication act correctly. They are a precondition for the correct choice and use of a code, definition of a situation and wording of a message.

The location rule is even more important in organizations than the interaction rule because it establishes strict formal requirements related to the situation and place where communication occurs. Formal requirements of the definite situation and the place determine significantly the interaction rule. In this case technical and spatial conditions are determined by the organizational structure of the institution, reflecting formal dependences of particular partners in the communication process. It is the organizations where the man works that create a definite style of communication – an attentive observer of everyday life is able to recognize differences in the communication styles of a professional soldier and civilian. The location rule is in this instance a principal factor structurally determining communication behaviours of individuals connected with a specific organization.

In the communication process encoded information has a form of a message, i.e. using the classical nomenclature, of a verbal or non-verbal signal delivered by a receiver by means of a carrier across a definite channel. A message in this meaning is characterized with a variety of physical forms which are often mutually complementary to one another. For instance, it can be a spoken or written statement or only a meaningful gesture. Generally, its form is a product resultant of a code, situational context and channel capacity. Signals, their carriers and channels have various forms in organizations according to a situation, place and their meanings. For example, a message will have a completely different form in the communication between two friendly workers occupying similar positions than in the situation when the receiver and sender have diametrically different positions in the hierarchy of a given organization. These forms of communication will often be accompanied by other carriers and channels. Friendly colleagues will more often use natural carriers during their communication (a free, informal statement) and informal transmission channels. Instead, a director formulating an official instruction will more often use a written form of communication and formal information channels. In this context we should notice that information channels in an organization are of significant importance and they directly affect the operations of an organization.

Decoding of a message, i.e. deciphering, interpreting symbols, signs and images delivered by means of a definite channel by the sender, is part of basic acts realized by the receiver. The message encoding and decoding procedure is a characteristic feature of organizations, groups and individuals[31]: "*Individuals, groups and organizations have a certain general feature which should be deemed as a main determinant of communication: the encoding process. Every system*

[31] Katz D., Kahn R.L., op.cit., s. 352.

which receives information, whether it is an individual, or organization, has its characteristic encoding process that means a limited set of the coding category through which some received information is assimilated". In this context it is said that the efficiency of the act of communication depends pro rata on the receiver's efficiency in decoding information and this means that[32]: *"The more decoding by the receiver matches an intentional message of the sender, the more efficient communication is"*. However, the correct recognition of sender's signals is insufficient.

Accurate decoding of information is only one of the requisites necessary for correct realization of the interpersonal communication process. Its efficiency will be higher if partners are more interested in one another – they will listen and observe one another, recognize correctly a given situational context and satisfy all other conditions related to communication. Otherwise efficiency will decrease when more interferences or distractions occur if partners fail to meet the above conditions.

Different kinds of noise are factors which in spite of the fulfilment of all required interpersonal conditions by partners in the communication process can weaken its efficiency. They are included in the specific kind of technical communication disturbances consequential not from individual personality features of partners, but from the physical environment, wherein the communication process takes place. According to the classical concept developed by C. Shannon and W. Weaver, noise is defined as technical disturbances occurring in a definite channel during the transmission of information. Thus, noise includes but is not limited to different sounds reaching out to partners and technical noise occurring practically in any transmission media (e.g. telephone, computer) used by them for communication purposes. These kinds of noise often appear in industrial companies in which e.g. the noise level, poor lighting, acoustics or loud conversations of other persons limit possibilities of interpersonal communication of workers to a considerable degree. In modern organizations, in spite of state-of-the-art technological solutions which aim at the elimination of communication noise we come across new kinds of noise connected mostly with the communication process between the man and the machine. The reason why they occur is maladjustment of machines to physical and intellectual requirements of the man. It is not the user's fault that the best computer 'hangs up' or malfunctions. Machines are unable to comprehend our behaviours or instructions and their more and more complicated programmes designed to simplify their cooperation with the man prove to be deceptive. These kinds of noise become a significant problem, because they refer to a wider and wider range of activities of the man. Computerization of all spheres of the human life leads to the civilization development on the one hand, whereas on the other

[32] Stoner J.A.F., Wankel Ch. *Kierowanie*, PWE, Warszawa 1992, s. 435.

hand it becomes a threat to the man. Machines controlling already many spheres of the human life 'hang up' depriving the man of light, water, electricity etc. Noise occurring between the man and the machine becomes dangerous and the threat of information terrorism becomes real. Hijacked computers of military organizations or dissemination of viruses destroying programs via the Internet, are only some examples to present the essence of the above problem.[33]

4. Communication competences of a manager in the 21st century

Managers in the 21st century are individuals whose communication competences underlie the creation of intangible assets of enterprises which are found to be the most important in the process of creating a competitive advantage. The characteristics of these assets include among other things the possibility to update them quickly, copy and develop them without large expenditure and adapt them to current expectations and requirements of a production process in an organization.[34] They are created by specific individuals under specific circumstances and this is why they can be very easily communicated to selected receivers and quickly interiorized and used.

In the present world the creation of a competitive advantage of an organization is first of all subordinate to high communication efficiency of the managerial staff. This is attained by developing definite skills – the competences which are an immanent part of behaviours of all people in an organization and, first of all, managers. Competences of present managers are governed by the following principles:

1. principle of communication dualism – awareness of process variability,
2. principle of communication intelligence – adaptiveness of communication,
3. principle of taking into account situational and socio-cultural contexts,
4. principle of individual personality features of partners in the communication process,
5. principle of skilful usage and reading of verbal expressions and non-verbal signals,
6. principle of utilization of knowledge and experience adequately to the situation,
7. principle of high-level ethical behaviours,
8. and principle of self-control.

[33] Woźniak J.W., *Selected Aspects of the Communication Process in the Modern Society*, s. 49-60, in: *The importance of company competence in the strategy of innovative development in the European Union*, edited by: Kunert O., *Foundation for Competence Promotion*, Łódź 2009.
[34] Kunert O., op.cit., s. 136.

Considering the problems of communication process management within an organization a general rule formulated D. Katz and R.L. Kahn should be bore in mind[35]: "*Communication needs to be seen not as process occurring between any sender of messages and any potential recipient, but in relation to the social system in which it occurs...".* Assuming the functional point of view of an organization, we must remember that every communication activity of the manager is connected with the realization of concrete assignments in the system. This behaviour is always subordinate to a definite situational context and a specific social sphere of a definite organizational unit on the one hand and to the external socio-cultural environment, on the other hand, as being a condition indirectly determining internal communication behaviours of participants of the communication process on the other hand. Communication skills of all participants in the communication process in an organization are a product resultant of many various personal and social features of particular subjects of the information exchange process. They are the original features of each member of an organization which during processes occurring therein is subject to permanent long-term transformations. They are also features which for instance make it possible to distinguish a good manager from a poor one and they may cause that the one who did not cope in a given situation will behave perfectly under other circumstances. This specific dualism of communication skills of people in an organization seems to be one of basic paradigms of the communication process in an organization. Another statement which seems to be as important as the above one is the ascertainment that a contemporary manager should display something which can be identified as communication intelligence, i.e. the ability to adapt to unforeseeable and variable communication circumstances. Personalities of partners in the communication process and their verbal and non-verbal abilities cause that this process occurs according to intentions and the usage of well-chosen expressions and phrases adequate to the situation as well as the use of earlier experiences contributes to high efficiency of this process. Self-control and behaviours conforming to high ethical standards determine the most important paradigm of the competency of the contemporary manager. The engagement of workers and management through confidence is possible only and exclusively when high ethical standards are maintained.

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Twórczy menedżer przemysłu
Wiedza techniczna
Umiejętności pozatechniczne

Streszczenie

W założeniach strategicznych Unia Europejska przyjęła kierunek zwiększania dystansu, w stosunku do krajów rozwijających się, w zakresie bardziej innowacyjnych produktów drogą społeczeństwa opartego na wiedzy. Wyznacznikiem społeczeństwa opartego na wiedzy jest zwiększanie poziomu skutecznie wdrażanych innowacji. W nowoczesnym modelu przemysłowym UE dąży się do maksymalnego zintegrowania procesów technologicznych z procesami produkcyjnymi w pełnej skali kontynentalnej, aby przewagi konkurencyjne państw członkowskich stały się źródłem możliwości wszystkich krajów Europy. Zatem od kompetencji innowacyjnych przedsiębiorstw zależy nie tylko konieczny wzrost konkurencyjności państw, ale konkurencyjność całych gospodarek.

Biorąc pod uwagę fakt, że reguły wolnego rynku nie są wystarczające do realizacji pożądanych długookresowych celów, rządy poszczególnych państw mogą wykorzystać szereg instrumentów stymulujących rozwój innowacyjności gospodarki. Oddziaływanie może mieć charakter bezpośredni lub pośredni. W obrębie działań bezpośrednich występuje system rządowych zamówień i pomocy dla badań i rozwoju, który w przeszłości dostarczył przykładów skokowych przekształceń technicznych, nowych wdrożeń i doświadczeń produkcyjnych, szczególnie widocznych w przemyśle elektronicznym i przemyśle silników lotniczych. Drugim bezpośrednim sposobem oddziaływania są zmiany w ustawodawstwie. System regulacji prawnych jest swego rodzaju systemem presji, który skłania przemysł bardziej do modernizowania istniejących rozwiązań technicznych niż do podjęcia ryzyka eksperymentu z rewolucyjnymi innowacjami.

Istnieje też druga grupa czynników, na które rząd ma tylko pośredni wpływ. Do tych czynników można zaliczyć dostępność kapitału ryzyka (venture capital), dostępność mobilnych wykwalifikowanych pracowników, warunki konkurencji w przemyśle i inne.

Porównując wsparcie rządów USA i Niemiec w procesie budowy gospodarki opartej o wiedzę, można zauważyć istotne różnice. Niemieckie priorytety oparte są na rynkowych zasadach konkurencyjności i stymulowanej współpracy przemysłu, rządu i placówek naukowych. Rząd angażuje się bezpośrednio jedynie wówczas, gdy poziom innowacyjności zdecyduje o sukcesie rynkowym. Niemiecka polityka innowacyjna nakierowana jest na wykorzystywanie instrumentów działań pośrednich, takich jak: tworzenie klimatu innowacyjnego,

obniżanie kosztów badań i rozwoju, zachęcanie dużych korporacji do współuczestnictwa w inwestycjach innowacyjnych. Rząd i poszczególne landy sponsorują w szerokim zakresie rozbudowaną sieć organizacji naukowo-badawczych, przy czym główny nacisk położony jest na badania mające zastosowanie w przemyśle. Przemysłowe innowacje „wielkiej nauki i techniki" mają wsparcie rządu poprzez wysoki priorytet w wydatkach budżetowych zwłaszcza na etapie wdrażania innowacji. Na uwagę zasługuje program „pierwsze innowacje", w którym rząd ponosi 50% kosztów komercyjnego zastosowania obiecujących nowych rozwiązań, jak również zapewnienie gwarancji bankowych dla konsorcjów bankowych w celu ułatwienia dostępności kapitału ryzyka.

Programy rządu amerykańskiego posiadają znacznie większą różnorodność, choć w większości widoczne są w nich cele społeczne, takie jak wspomaganie małych firm, tworzenie miejsc pracy, wzrost dostępności dóbr w celach konsumpcyjnych, ochrona społeczeństwa przed negatywnymi skutkami techniki, nie zaś wpływ na poziom innowacji. Jednak uszeregowanie priorytetów w programach rządowych wskazuje na kształtowanie polityki naukowo-technicznej w kierunku wspomagania zarówno podaży innowacji, jak i popytu konsumenckiego na innowacyjne produkty. Obszary programów rządu USA kierują strumień pomocy w rozwój podstaw nauki niezbędnej dla rozwoju nowych technologii, kształtują politykę oddziaływania na struktury przemysłu, politykę ekonomiczną rozwoju innowacji, a także politykę rządową oddziałującą na handel międzynarodowy. Można zauważyć równoważność celów innowacyjnej polityki zarówno w celach społecznych, jak i rozwojowych, zwłaszcza w znaczących gałęziach amerykańskiego przemysłu: lotnictwa i silników lotniczych, samochodowym, stalowym i półprzewodników oraz materiałów syntetycznych. Znamienny dla amerykańskich programów rządowych jest szeroki wpływ na wzajemne powiązania między różnymi gałęziami przemysłu. Zarówno przemysł obronny, jak i rządowe zaplecze badawcze wspomagają poszczególne gałęzie przemysłu, szczególnie ważne dla gospodarki. Służą temu m.in. sporządzane przez Kongres analizy w zakresie potrzeb i możliwości amerykańskiego przemysłu, ustawodawstwa i polityki podatkowej, jak również zagranicznych inwestycji.

Innowacyjność oparta jest na wiedzy z zakresu problematyki wprowadzanej innowacji oraz na licznych umiejętnościach pozatechnicznych, które mogą doprowadzić do sukcesu, czyli wytworzenia masowego popytu na innowacyjne wyroby. W przodujących koncernach występuje norma dotycząca efektywności nowych rozwiązań. Innowacja powinna zapewnić wyższą rentowność firmy w okresie nie dłuższym niż pięć lat. Spełnienie tego kryterium wymaga od przeciętnego przedsiębiorstwa odpowiednich relacji pomiędzy pomysłami wyjściowymi, koncepcją a wyrobami odnoszącymi sukcesy. Takie wyliczenia w USA są już rozpowszechnione, lecz w Europie są rzadkością. W USA wszystkie elitarne uczelnie od dawna kontrolują wiedzę z tego zakresu.

Natomiast w Europie jedynie w dwóch uczelniach niemieckich można spotkać egzaminy dotyczące innowacyjności, a wykonane badania wykazują, że w Niemczech tylko 17% menedżerów średnich szczebli i tylko 7% członków zarządu przeszło gruntowne szkolenia z zakresu wprowadzania innowacji.

W literaturze światowej coraz więcej uwagi poświęca się wartości wiedzy, a więc wartości, którą pozyskuje przedsiębiorstwo wprost od pracowników. To oni powodują, że jedno przedsiębiorstwo osiąga sukcesy, podczas gdy inne, podobne od strony materialnej – ginie. W nadchodzących latach w najwyższej cenie będą menedżerowie, którzy będą twórczymi przywódcami i stworzą odpowiednie warunki dla kreatywności i innowacyjności pracowników.

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