

EVALUATION OF THE USEFULNESS OF ABSTRACT THINKING AS A MANAGER'S COMPETENCE

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Abstract: This paper refers to the problem of teaching students of management abstract thinking skills and tools that support this matter. A research carried out on a group of students, aimed at evaluating respondents attitude towards abstract perception of the reality, their professional career visions and willingness towards self-development. Additionally, it presented the possible application of these competences. It was showed that respondents have ambitious career plans and are ready to improve their skills in the discussed subject. From the results of the research it was also argued that the respondents' positive attitude towards abstract thinking competence has increased.

Key words: Resource-based management, space management, GIS, career planning, skills and competences.

Introduction

The contemporary labor market in Poland is characterized by some kind of contradiction. On the one hand, Polish people complain about high level of unemployment, on the other entrepreneurs complain about the lack of properly qualified staff. Therefore a following question can be asked: are employers' demands for candidates too high or are the candidates not able to present their skills properly?

Considering the contemporary economic processes, among other, such trends as globalization and the concentration of the organization can be distinguished. Thanks to these tendencies multinational corporations play increasingly important role in the world economy and more and more often dominate markets in particular industries. The running of large corporations requires on the one hand a growing entrepreneurship and on the other hand introduction of corporate governance becomes necessary in order to organize the processes in the corporation. To conduct their business, growing corporations need more and more resources of various types, that can include their own resources or derived from cooperating entities.

Human factor has a significant impact on the operation of an organization. There are two different approaches to human resources. The first one is choosing personnel adequately to the needs of the organization. The second one is ensuring that the interests of individual employees are consistent with the objectives of the organization. Organizations need various types of staff. On the one hand, employees who are creative, enterprising, creating new added value (sometimes even contrary to accepted corporate rules) are indispensable. On the other hand, competent staff implementing strict corporate rules are also needed.

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In this paper the topic of demand for abstract thinking in contemporary organizations perceived by students of the faculty of management was undertaken. For the purpose of these paper a study was conducted on a group of students who had to present their opinion about the demand for abstract thinking in resource management. As a part of the study, students indicated their own level of knowledge of abstract thinking, showed their own view of the organizations' demand for these skills and disclosed their own plans. The purpose of this paper is to present the views of the studied group of students about the perception of the courses of their own professional development and how they are perceived through the prism of the previously mentioned issues.

Professional development visions of the students of management

Managerial studies in their assumptions are designed to educate the broadly understood management team of an organization, an enterprise or a business venture. To this end, students should acquire specific knowledge and skills included in the curriculum, presented in the classroom or developed through homework. Depending on the major and specialization, students explore general management knowledge and more specific one from the selected area. However, gaining qualifications does not only depend on the university and implemented curriculum. The value of the graduate is also determined by student's effort and future career vision. The student himself must determine his professional development plan and should adjust the acquired knowledge and skills to the planned occupational activity.

In general, it can be assumed that students wishing to work in their studied profession can expect these roles in their professional activity:

1. to be a line employee,
2. to be a freelancer,
3. to run own business,
4. to become a professional manager (CEO, president of the board, member of supervisory board, etc),
5. to undertake economic projects.

Management includes a number of areas, such as: organization of business processes, human resources, finance and accounting, widely understood logistics. A line employee must have a practical knowledge from the area in which he is employed and in addition must know the procedures and corporate rules. Abstract knowledge and creativity can be an important factor enabling professional advancement as far as entrepreneurship of line employees is desirable in the organization.

Being a freelancer means working with different entities, however without being closely associated with a specific organization. The most characteristic example of it is a business consulting. From a freelancer an appropriate level of practical knowledge in the field of his professional activity is required. This knowledge should enable both undertaking the current linear work and organizing

the functioning of individuals in a certain area. Abstract knowledge is needed especially when an employee has to demonstrate conceptual or entrepreneurial work.

Running own business requires adequate practical knowledge in the field of business. What is more a certain level of knowledge of organization and management is also necessary. Abstract knowledge is mainly used during reorganization of the company (for example, during business processes modeling-e.g [11]) or to determine the rules of its operation's analysis.

From a professional manager a right level of management knowledge is required. In this case, both the practical and theoretical knowledge are needed. Just theoretical knowledge may be insufficient. Given the scope of management competences which are related to entire enterprises, the ability to structure knowledge and its practical application are necessary. What is more the following skills may be essential in the case of professional managers: ability to create abstract constructions to the described state of organization or ability to plan and support decision processes (e.g. the usage of econometric models).

A group of professionals can undertake a role of an integrator of a project, business ventures or virtual organization. In this case, the creativity is a feature of a great importance. The ability to develop and organize various types of projects also requires appropriate practical knowledge from the field of the undertaking. The ability of building the abstract model of a certain undertaking and developing a certain set of tools, which enable this model construction are needed to develop similar projects .

Each type of roles need suitable level of knowledge, which are one of the most important factor of business success (look at [6], [8])

In order to accept a certain role it is necessary to know information systems and IT tools. Various types of information systems support numerous areas of managers' activities. The ability of using abstract thinking is crucial in the activities of managers. However, in order to describe some part of reality apart from theoretical tools knowledge it is also required to be familiar with a specific software enabling reality modeling by import of actual data about the business activity.

Abstract thinking as a part of managers' competences

Business practice usually talks about real resources bringing tangible benefits regularly measured in monetary units. Therefore it is of a great importance to have the ability of performing real task, such as: manufacturing a specific product, device service, legislation knowledge and its application, accumulation of relational capital etc. On this basis, current operations may be carried out and the description of their effects according to established schedules can be made.

However, the greater the organization or the range of decision-making competences, the greater the demand for various tools enabling mapping phenomena and regularities (relations) in the environment of a company. In such a

case various types of modeling tools are used to facilitate the description and visualization of the environment and the processes therein (e.g. [3]). To complete these tasks it is needed to have abstract thinking competences and to know a certain set of tools.

There may types of descriptions applied. Among others the most commonly used include:

1. economic and financial indicators,
2. system description,
3. statistical and econometric models,
4. business process models,
5. semantic models,
6. spatial models.

Different types of tools have been developed for different types of descriptions. Table 1 presents these tools.

Table 1. Tools used in different types of abstract description

Types of description	Tools used
Economic and financial indicators	Indicators of financial and economic analysis available in Business Intelligence-class systems
System description	Diagrams and graphs describing the system design, Activity Diagram in UML, tools available in CASE Tools [2]
Statistical and econometric models	Databases of methods and models in MRP/ERP/BI class systems and Decision Support Systems (DSS) [5]
Business process models	Tools enabling business model creation, such as: BPMN, BPML [7], IR [4]
Semantic models	Semantic description of some parts of reality, using Web tools operating in closed systems, e.g. Internet. [13]
Spatial models	Spatial description based on GIS methodology [12]

The ability of abstract thinking can be used at different management levels and roles. The demand for thinking abstractly can be further diversify by the area of the organization in which the person operates.

The competences of managers in resource management

The availability of certain type of resources is essential for the proper functioning of modern enterprises and is considered at two levels: organizational and realization [12].

At the organizational level one of the main problems is the modeling of business processes. Such modeling consist in developing processes algorithms (involving their alternative courses), identifying the actors, defining performance indicators and identifying the resources necessary for their implementation. In this

case abstract thinking is essential. It determines the ability of designing new processes and analyzing the existing ones by adopted criteria. At this step we can also estimate the amount of resources needed to implement these modeled processes. Estimation of resources is not always given in absolute terms, however it allows to define interrelation between different types of resources [9].

In order to design a business process such tools as: BPMN, BPML or UML may be used [1]. However, statistical or econometric models contained in DSS and BI systems will be required to estimate the necessary resources

Implementation of design processes usually is the responsibility of line employees who perform staff functions. Nevertheless, before the developed process models become organizational instructions they need to be approved by the management board of the organization.

During implementation stage execution of designed processes takes place. Abstract thinking is needed to plan the real amount of resources necessary for the implementation of real processes. This process requires the identification of the exact way of process, indication of specific actors and plan of logistics processes that take into account the time factor. The need of using specific tools raises with the size of an organization and complexity of the processes. In such a case, a proper usage is not only the ability of using tools given in Table 1 but also the proper selection of data describing the existing decision-making situations. Regulations made at the organization level define implementation procedures, but do not predict the practical implementation determinants for each process.

Supervising the implementation of specific processes usually is the responsibility of staff line, but monitoring and effects evaluation is carried out by managers performing other roles. The ability of perceiving the reality in an abstract way is also needed in control. It is not enough to know indicators (e.g. financial or economic). It is vital to properly select data for the designed and models, as well as to have a good interpretation of the results.

These considerations show, that resource management requires appropriate competences of abstract thinking. Moreover the knowledge of proper tools is necessary. Students of management should be aware of this fact.

The methodology of the research conducted among students

The research was carried out on a group of students who are in the middle of their first cycle studies. The study was conducted via electronic survey. For the purpose of the research a specially created questionnaire was used as a kind of didactic aid.

The aim of the study was to determine the level of students' awareness of economic practice, information tools used and needs for innovation and entrepreneurship. These objectives have not been fully disclosed to students. The structure of the questionnaire was designed not only to collect respondents' opinions, but it also attempted to educate students and indicate relation between selected problems relevant to management processes.

The questionnaire contained 15 semi-open questions. For the purpose of this study there were six important questions regarding: the usefulness of abstract thinking in management, knowledge of information systems that are currently used, future career plans and desire to participate in business process modeling.

Other questions concerned the space management, which was treated as an example of abstract thinking [10]. The order of these questions had an educational character and was meant to indicate in which areas abstract thinking in the form of space descriptions can be used. Space management was selected as an example of a formal structure that can be described and visualized in various spaces. It has been treated as a kind of expansion of the broadly known by students concept of the systems approach.

The questionnaire began with a strong questions related to the subjects, i.e. whether students consider abstract thinking useful in the contemporary management. The next question concerned the need for information systems usage and the extent of it. Then there was a question about respondents' career plans (i.e., the role they wish to play in their professional career). These questions were mixed with questions about space management and somehow engaged respondents into discussed issues. Their task was to draw attention to the situation in which abstract thinking may be used. The final question was to verify the usefulness of the independent thinking and a desire for self-development through getting to know tools facilitating business process modeling (facilitating the usage of abstract thinking).

The results of the survey will be analyzed from the following points of view:

Do students notice the need for abstract thinking in management?

Do they imagine to what these skills can be used?

Are their career ambitions supported by the desire of self-development?

Do the subject of space management proved to be good for verification?

The results can be used to determine what are the expectations and attitudes of students after studies. Particularly, whether they want to gain a precise knowledge or a general intellectual development.

The Research results

The starting point for the analysis of the collected material was to study the answer to the first question in the questionnaire: *do you think that abstract concepts or structures may be used in the management of modern organizations?*

The vast majority of students, as many as 83%, stated that abstract concepts and structures do not need to be used in the management of organizations. Only 17% admitted that they could and undertaking new innovative projects was recognized as a confirming example.

The answers to the initial question are a subject of later verification. Using the questions concerning the application of space management within the resource-based approach was meant to link different areas of resource management with the spatial descriptions. By treating space management as an example of the application of abstract structures it was examined whether students notice its application in various business areas. Table 2 presents gathered results.

Table 2. Declared by students application of abstract constructions in various areas of the management

Resource management areas	Percentage of respondents
Materials resources	55%
Human and knowledge resources	49%
Financial resources	47%
Waste management	41%
Tools and machinery	39%
Entrepreneurship	39%

The mentioned results indicate that with answering subsequent questions, the respondents' awareness of abstract thinking usage in business operation increased. What is more students were able to find its application in various operational areas of the company.

The next matter was to determine respondents career plans. In this case, the question was about the roles students expect to have in their future professional activities. The answer to this question is presented in Table 3.

Table 3. Declared by students roles in future professional activities

Expected role	Declared share
To run own business	57%
To become a professional manager (CEO, president of the board, member of supervisory board, etc)	43%
To be a line employee	10%
To undertake economic projects	7%
To be a freelancer	2%

More than one expected role could have been selected, therefore the results do not add up to 100%. Taking into account that the percentage of answers summed 119% it means that only in 19% of the responses more than one option was chosen. Therefore, it can be concluded that the majority of respondents, at least at this stage of education, has clearly defined career plans about the expected role in the future. Most of students declared willingness to work as a manager with large decision-making powers (57% wants to run own business and 43% aspire to be board-level managers). In addition, 76% of respondents expressed willingness to manage resources of an organization or a business ventures in which they would participate.

It can be assumed that most of the students would like to develop professionally. For this purpose, students' desire and aspirations of self-development were measured. In order to verify this matter, the skills of business processes designing were checked. Answers to the question: *is the ability of abstract design of business processes essential for today's managers?* are presented in Table 4.

Table 4. Declared by students demand for skills of abstract business process design

Level of demand	Percentage of answers
It is necessary	24%
It is required	12%
It is useful	59%
It is useless	5%

From the results it can be concluded that the discussed competences are useful (it was a dominant response 59%), however just every fourth respondent indicated that they are absolutely necessary. Moreover, it can be assumed that with the filling out of the questionnaire the positive attitude towards competence in the field of abstract thinking slightly increased to 24% compared to 17% at the beginning of the study.

Nevertheless it should be kept in mind that at this stage of students education, their practical knowledge of business organization is still very limited. Hence, only 10% of respondents declared the knowledge of tools for modeling business processes. 85% of the remaining students stated that they would be interested in getting to know these tools. Therefore, it can be argued that students ambitions in terms of their career plans are reflected in the desire to acquire knowledge of abstract thinking and practical application.

The survey was concluded with a question *whether it is worth to invest in a broadly-understood concept of space management?* 49% of respondents answered that it was worth to invest in this subject. Assuming that space management is an abstract concept it can be argued that the interest of the respondents about the surveyed issue has increased (49% vs. 17% initially). It can be concluded that the research subject, initially unknown for the majority of respondents, has become much more interesting.

Summary

Research results show that students of management at least declare to be an ambitious professional group, whose members want to hold high and responsible positions in their future career (about 90% of respondents). Their ambitions are confirmed by the willingness of further education (as it was in the case of expressing enthusiasm about acquiring knowledge of business process modeling tools, where almost 90% of students know or wish to get to know these tools). For the majority of respondents, the subject of the research was not well known at the beginning of the survey. Along with filling out consecutive questions of the questionnaire the respondents were becoming more familiar with the surveyed issues and their attitude toward competence of abstract constructions usage was becoming more positive. In the last question about the reasonability of investing in *space management* 49% of students had a positive attitude.

It can be argued that the concept of space management proved to be good for the subject of willingness to know the tolls of abstract description of reality. Respondents have read the intention of the research quite well and while filling out the questionnaire their attitude towards the subject was evolving.

Finally, there are two more useful reflections after analyzing the results obtained. The first one is a confirmation that students should be thought the abstract perception of reality, but even then its practical application need to be indicated. The second one is an observation, that it is worth to conduct research on students, because in this way they can broaden their knowledge and therefore some didactic goals can be achieved.

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OCENA PRZYDATNOŚCI MYŚLENIA ABSTRAKCYJNEGO JAKO KOMPETENCJI MENEDŻERA

Streszczenie: Niniejszy artykuł odnosi się do problemu nauczania studentów zarządzania umiejętności abstrakcyjnego myślenia i narzędzi wspierających tą kwestię. Badanie przeprowadzone na grupie studentów miało na celu ocenę postawy respondentów wobec abstrakcyjnego postrzegania rzeczywistości, wizji ich kariery zawodowej i gotowości w kierunku samorozwoju. Dodatkowo zaprezentowało możliwe zastosowania tych kompetencji. Wykazano, że respondenci mają ambitne plany zawodowe i są gotowi, aby poprawić swoje umiejętności w omawianym temacie. Wyniki badania wskazują również, że pozytywne nastawienie respondentów do kompetencji myślenia abstrakcyjnego wzrosło.

Słowa kluczowe: zarządzanie oparte na zasobach, zarządzanie przestrzenią, GIS, planowanie kariery zawodowej, umiejętności i kompetencje.

作为一个经理能力抽象思考的效用的评价

摘要: 本文是指教学学生管理抽象的思维技能和工具支持这件事的问题。上一组学生，目的是评价对抽象的概念的现实，其职业生涯愿景和实现自我发展意愿的受访者态度进行了研究。此外，它提出这些能力可能的应用。它被表明受访者了雄心勃勃的职业计划和准备好要提高他们的技能在讨论的课题。从研究的结果也有人增加了抽象的思维能力的受访者的积极态度。

关键词: 基于资源管理、空间管理、地理信息系统、职业生涯规划、技能和能力。