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Empirical verification of stimulators and inhibitors of creativity development and shaping the creative attitudes of students

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Abstract

Creativity, beside knowledge and innovation, is a significant determinant of the growth of modern economies. It is the potential of non-materialistic resources on which depend economic successes of whole regions as well as of business entities functioning in them. Non-materialistic resources are difficult for diagnosis owing to their attributes and a difficulty appears among researchers of the presented phenomena in interpreting the applied methods and the analysis of obtained research results. However, all the time attempts are made to describe economic components of this type because theorists as well as experienced experts of economic life prove, in their numerous publications on the problem, that the significance of these resources for the development is unquestionable. Therefore, the attempt to study the determinants of creativity development and creative attitudes among young people was made. These factors are so desirable in today's economy. The main objective of the research was: Using scientific procedures and using the appropriate methodology examined and recognized stimulators and inhibitors of creativity development at universities and their impact on the creativity development of students. The considerations were the basis for the formulation of research hypothesis: The higher the level of stimulation from the university in the development of creativity, the higher the level of creativity among students, which as part of the intellectual capital is a major factor in the development of micro- and macro-region. In order to verify this objective and the research hypothesis, tests on a group of 232 students from the University of Szczecin, West Pomeranian University of Technology and the Academy of Arts were conducted.

Keywords: competence, students, human capital, creativity, higher education institution

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1. Introduction

Characterizing and describing the creativity as a multidimensional phenomenon, taking into account, on the one hand, a creator, on the other hand, the creative process, it is necessary to analyze the factors promoting and impeding creativity in everyday life, but also in professional. Therefore, interesting are the following issues - what conditions are conducive to creativity, which determines that the individual gifted with extraordinary abilities actively and passionately involved in life at various levels, and another equally talented lacking courage, willingness to work and enthusiasm. Why do so many units, at the same time, avoiding creative activities, functioning in the imitative sphere, even though, according to research, creativity is available to everyone. Hence, a further part of the article is devoted to the above issues to be able to demonstrate what is a decisive factor in shaping creative attitudes and behaviours among students and research workers

2. Stimulators and inhibitors of individuals creative development in the organization

Creativity is a dynamic process which implies a certain activity of unit. It should be emphasized that this activity often requires stimulation, including and incentives to bring rational benefits. Therefore Sołowiej (1993) characterized the following stimulators of personal creativity conducive to its development: openness to cultural issues - should be carried out numerous discussions, to verify the views already known and established hypotheses; a high position in the social system of values that can be achieved through self-realization and personal development; great access to the products of creativity and all the information; cultural diversity, the impact of differing views, religion; tolerance for something new and unknown; cooperation between prominent individuals; social support, approval for the creativity and the creators themselves.

Unfortunately, this activity can also meet many obstacles, which are collectively referred to as barriers for personal creativity. The literature shows many determinants of inhibiting the above process. Dobrołowicz (1993), examining barriers of creativity, pointed to three groups of factors preventing the formation and manifestation of creativity, and they are:

- Subject barriers - physical, material and technical barriers. These include the inconvenience of daily life, particularly financial, economic difficulties and high cost of living. All of this means that the tension increases, it involves excessive fatigue, overwhelming psychological atmosphere and unfavourable conditions to any development;
- Subjective barriers - associated with perception, mind, emotions, motivation, personality. You can distinguish the following character traits: fear of ridicule, rejection, lack of self-confidence, lack of courage, conformism;
- Psychosocial barriers - social structures, legal sociology, negative reaction of environment to creativity.

Adams (2011) proposed a comprehensive list of barriers hindering the creative process in a significant way:

- Perceptual barriers - manifested by difficulty to define the problem, information or perception problem from different perspectives (eg. due to stereotypes);
- Cultural barriers - the impact of patterns and the cultural framework may lead to the adoption of wrong views;
- Environmental barriers - result of a variety of disturbances occurring in the nearest or distant environment of the individual. For example, the hostility in the group,

excessive criticism and conflict can inhibit the creative process of the individual. Here may also occur a leadership barrier of autocratic management way, lack of freedom and exerting pressure on the unit, which may limit its creativity;

- Emotional barriers - that individual personality traits that may limit creativity. These include, for example, fear of taking risks and making mistakes. This category also includes a limited imagination and inability to distinguish reality from fantasy;
- Intellectual barriers - in this context, talking about the wrong ways of thinking, and they may result from incorrect or unverified information, orientation to inappropriate solutions and sticking to specific strategies of thinking. Another problem is the bad organization of work;
- Communication barriers - the inaccuracy of verbal expression, linguistic awkwardness, are typical examples of expressive barriers.

3. Empirical verification of the effect of stimulators and inhibitors on the creativity of students in their opinion - the results of research

In the survey 232 students have participated representing three institutions of higher education from West Pomeranian region, namely University of Szczecin (US), West Pomeranian University of Technology (ZUT), Art Academy of Szczecin (AS). 209 questionnaires have been used in the process of analysis: 98 from US, 102 from ZUT and 9 from AS. Detailed presentation is shown in table 1. The choice of research sample was based on the diversification of institutions of higher education which was crucial in reflecting types of creativity used in business practice. The literature of the subject matter differentiates three types of creativity, namely: technical, scientific and artistic creativity (Lumsdaine, Shelnutt, Lumsdaine, 1999; Kloudova, 2010; Wajdenfeld, 2013). Women constituted nearly 40% of the survey participants. 75% of the respondents were from Szczecin area, the rest of them were from the rural areas. The main areas of research focused on levels that concerned the way the impact of stimulators and inhibitors on the development of creativity among students. The scope of the study included both, the impact factors beyond the workplace and science and interdependent.

Table 1. Numbers of respondents

209 students – 100%					
US		ZUT		AS	
98 students		102 students		9 students	
47%		49%		4%	
Women	Men	Women	Men	Women	Men
66	32	15	87	3	7
32%	15%	7%	42%	1%	3%

Source: own study.

In the first step we analyzed the issues in which we estimated the possibilities of development of creative abilities among the respondents. Their pointed out stimulators and barriers that favoured at the individual development of creative attitudes. The exact distribution of answers is presented in the table below. The results showed that the main barrier to the development of creative attitudes over many years of developing surveyed social units were factors associated with perception, mind, emotions, motivation and personality. In particular, these factors hindered the development of creativity in women. It seems that it is right because the process of perception and construction of functions in a woman brain, may have just such conditions. For men largely a difficult obstacle that hinders development of creative attitudes were psychosocial factors. Studies have shown during an

interview with the respondents that concern for the environment reaction was the main development inhibitor in the presented field. In contrast, as a major stimulant respondents indicated a strong motivation resulting from cognitive curiosity, perseverance and persistence and the ability to critically evaluate, recognize gaps, ambiguities, and at the same time cautious in setting new hypotheses and constructing new theories, another place was taken by the internal energy potential.

Table 2. Determinants inhibiting and stimulating creativity at the individual level independent from the work environment (number of people in groups)

Factors inhibiting creativity	US	ZUT	AS
Subjective barriers - associated with perception, mind, emotions, motivation, personality. You can distinguish the following character traits: fear of ridicule, rejection, lack of self-confidence, lack of courage, conformism.	34	43	4
Psychosocial barriers - social structures, legal sociology, negative reaction of environment to creativity.	42	51	4
Subject barriers - physical, material and technical barriers. These include the inconvenience of daily life, particularly financial, economic difficulties and high cost of living. All of this means that the tension increases, it involves excessive fatigue, overwhelming psychological atmosphere and unfavourable conditions to any development.	22	8	1
Factors stimulating creativity	US	ZUT	AS
Strong motivation resulting from cognitive curiosity, perseverance and stubbornness.	36	34	4
Introversion that is generally energy is directed "inward".	16	24	1
Nonconformity, independent in thought and action, to resist external pressure, schemas.	15	12	2
The ability to critically evaluate, perceive gap, ambiguities, and at the same time cautious in setting new hypotheses and constructing new theories.	18	22	1
Lack of emotional balance, ambition, sensitivity, self-confidence, radicalism in their behaviour.	13	10	1

Source: own study.

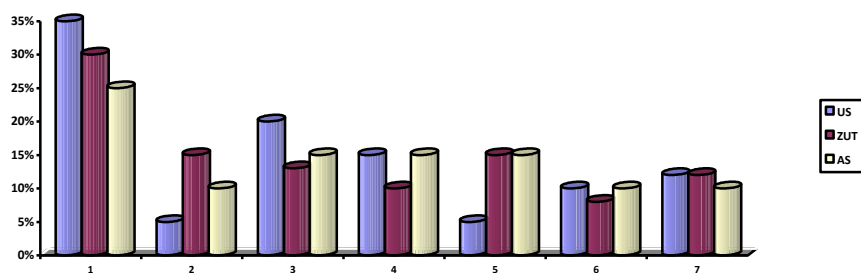
A further stage of the study consisted in the fact that we tried to estimate the determinants of creative behaviour, according to students at the enterprise level. Therefore, it sets guidelines indicating the factors that favour the development of creativity or inhibit. The results obtained are presented in Table 3 and Figure 1.

Table 3. Determinants inhibiting creativity in enterprise (number of people in groups)

Factors inhibiting creativity	US	ZUT	AS
The conviction of own lack of creativity.	7	30	1
Too little time thinking and lack of experience that can be used. Too big stress and workload may hinder the objective reasoning, and inhibit the natural thought processes.	13	23	3
Fear of failure or ridicule in front of colleagues.	22	14	1
Too rigid treatment of rules and regulations, lack of creative freedom. Excess rules may lead to mental laziness,	26	1	1
Managing with common sense without regard intuition. Limiting the logic inhibits the imagination.	10	5	2
Acceptance of false assumptions. Someone who cannot get rid of prejudices and stereotypes, do not thinking creatively.	8	18	1

The negative attitude of the staff and teams, which focus on unwanted side issues rather than actively seek solutions.	12	11	-
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Source: own study.



1. openness and friendliness of the workers to each other and finding good sites of appearing problem,
2. greater willingness to take risks,
3. the creative process begins with thinking and generating possible solutions. The ability to cope with the stress,
4. creative freedom, flexibility of thinking,
5. unconventional way of thinking, elimination of stereotypes,
6. intuitive perception of reality, sensitivity to emerging opportunities even in difficult situations.
7. confidence, openness, appreciation of each other, faith in their own strength.

Source: own study.

Figure 1. Determinants of stimulating creativity in enterprises (% of people in groups).

In order to identify opportunities for the development of creative attitudes among the students, were surveyed what techniques and tools for the development of creativity used during the study. It turned out that most people as a first tool mentioned brainstorming. Other position went to the Delphi method, lotus blossom technique and a mind map. Especially women found that brainstorming is essential for the development of creativity in the organization because it binds the team, allows for mutual learning their skills, aptitudes, speed of thinking, reacting to difficult situations. In addition, this method allows for resolving many conflicts that could arise if each person individually trying to develop a plan of action without consulting with the rest of the team. All respondents believed that the development of creativity depends on friendly conditions which are created at various levels of functioning, both at the level of a lecturer - student, as well as at the level of the student - student and overall organization - the university as a whole and the student.

Table 4. The most commonly used methods for developing creativity

Methods for developing creativity in company	US	ZUT	AS
Analogy method	NO	NO	NO
The analysis method of known technical systems	NO	YES	NO
Brainstorming	YES	YES	YES
Brainwriting	NO	NO	NO
Delphi method	YES	YES	YES
Lateral Thinking	NO	NO	NO
Lotus Blossum Technique	NO	YES	NO
635 method	NO	NO	NO
Mind mapping	NO	NO	NO
Morphological box method	NO	NO	NO
Search method	NO	NO	NO
TRIZ method	NO	NO	NO

Source: own study.

4. Conclusion

Analysis of literature and empirical verification of the obtained results allowed to indicate the rules by which you can influence the creativity of the individual in the organization (Sokoł, 2015):

- Create the conditions for an employee to present their views and visions on the task to perform;
- Create the right atmosphere at work and a sense of security to the employee;
- Enrich the creative organizations environment and worker - allow for diversity;
- Identify creative workers;
- Make changes, avoid routinization of work;
- Exceed the limits and boundaries to allow develop new ideas;
- Develop the knowledge and experience of employees;
- To perceive ideas where they do not exist;
- Analyze different ideas;
- Provide training and training on the development of creativity;
- Encouraged to propose new solutions (Cooper, 1986);
- Identify errors or shortcomings and opportunities for improvement (Cooper, 1986);
- Introduce adequate communication which will help the employee reach with new ideas to the leaders (Cooper, 1986);
- Strengthen the status of the creative person (use of praise, rewards) (Cooper, 1986);
- Defend creative people against attacks by others (Cooper, 1986);
- Sometimes leave creative people in incubation (rest) (Cooper, 1986);
- Tolerate failure (Cooper, 1986);
- Use various sources of stimulation (Cooper, 1986);
- Use the quick evaluation and exploitation of results (Cooper, 1986).

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