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TECHNOLOGY ENTREPRENEURSHIP, CREATIVITY, AND POSITIVE ORIENTATION AS MECHANISMS OF ENTREPRENEURIAL BEHAVIORS IN ORGANIZATIONS

Summary. In the article the authors present a model of entrepreneurial organizational behaviors that consists of the following constructs: technology entrepreneurship, creativity and positive organizational orientation. The construct of the research model is an outcome of a critical analysis of management literature and preliminary empirical research. In the following chapters the authors describe particular constructs, which are parts of the research model of entrepreneurial organizational behaviours.

Keywords: technology entrepreneurship, creativity and positive organizational orientation

PRZEDSIĘBIORCZOŚĆ I TWÓRCZOŚĆ TECHNOLOGICZNA ORAZ POZYTYWNA ORIENTACJA JAKO ELEMENTY PRZEDSIĘBIORCZYCH ZACHOWAŃ ORGANIZACJI¹

Streszczenie. W artykule autorzy prezentują model przedsiębiorczych zachowań organizacji złożony z trzech konstruktów, tj.: przedsiębiorczości technologicznej, twórczości technologicznej oraz pozytywnej orientacji organizacji. Konstrukcja modelu badawczego jest wynikiem krytycznej analizy literatury przedmiotu oraz wstępnie przeprowadzonych badań empirycznych o charakterze pilotażowym. W kolejnych rozdziałach artykułu autorzy omawiają poszczególne konstrukty składające się na ten model badawczy.

Słowa kluczowe: przedsiębiorczość technologiczna, twórczość technologiczna i pozytywna orientacja organizacji

¹ The studies were conducted as part of the research project financed by the Polish National Science Center in Cracow (grant no. UMO-2012/07/B/HS4/03128).

1. Introduction

The aim of the article is to discuss the research construct concerning entrepreneurial organizational behaviors as development mechanisms of innovative enterprises.

In the field of entrepreneurial organizational behaviors, defined as features or attributes of an organization, there is a consensus in the literature that the three core attributes of entrepreneurial organizations are risk-taking, pro-activeness, and innovation output².

The research construct is comprised of three major dimensions: technology entrepreneurship, creativity, and positive organizational orientation. The above-mentioned structure of the research construct is the outcome of the critical literature analysis and preliminary empirical research.

This research model is innovative; therefore, it needs to be verified further in the research process. The concept of a high performance organization was introduced in the research model as a measure of the innovative development of an organization. The concept assumes that the organization's development is a multidimensional phenomenon, which has to be measured both objectively, including financial, innovative, and employment-level parameters, and subjectively, i.e. by describing the social climate in the organization.

The following figure shows the diagram of the model of effective entrepreneurial behaviors, which is based on technology entrepreneurship, creativity, and positive organizational orientation.

There are three variable groups in the research model presented in the above-mentioned figure: (a) the first group concerns three research constructs which are defined as mechanisms of entrepreneurial development of the organization; (b) the second variable group is the outcome of the overlapping of these three development mechanisms, which create the attributive image of the entrepreneurial organization (it is comprised of the following features: risk-taking, pro-activeness, and innovation output); and (c) the third variable group consists of result variables or parameters that measure the development of the organization towards an innovative organization, i.e. financial, social, innovation, and employment measures. In other words, the model of effective entrepreneurial behaviors describes the mechanisms of technology entrepreneurship as 'motor' factors, driving the effective development of the organization. Effectiveness is understood as the ability of the organization to achieve above-average dynamics of development, measured by the above-mentioned subjective and objective measures.

² Craig J.B., Pohjola M., Kraus S., Jensen S.H.: Exploring Relationships among Proactiveness, Risk-Taking and Innovation Output in Family and Non-Family Firms. "Creativity and Innovation Management", No. 23, 2014, p. 199-210.

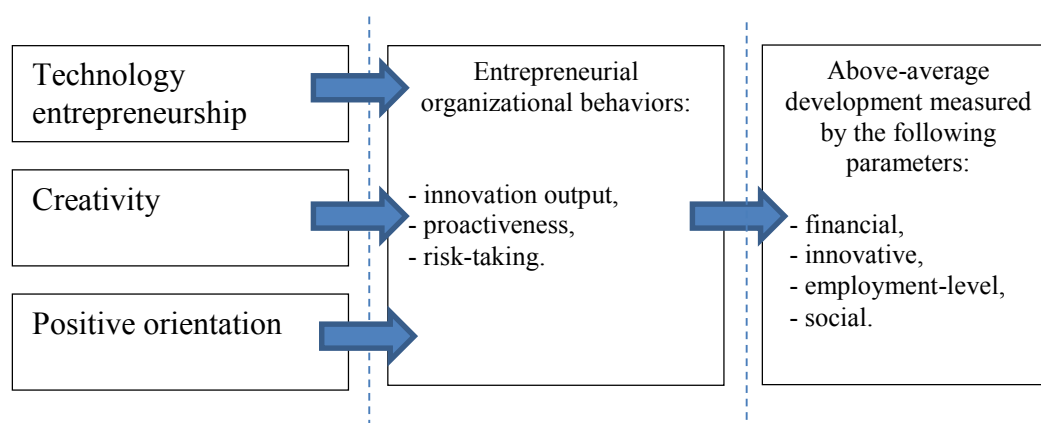


Fig. 1. Technology entrepreneurship, creativity and positive organizational orientation as dimensions of entrepreneurial organizational behaviors

Rys. 1. Przedsiębiorczość, twórczość technologiczna oraz pozytywna orientacja organizacji jako elementy przedsiębiorczych zachowań organizacji

Source: Author's own elaboration.

2. Technology entrepreneurship as the key mechanism of entrepreneurial organizational behaviors

The phenomenon of technology entrepreneurship has recently been an important sphere (suggestion: use *topic* instead of sphere) in the discussion about the development mechanisms of enterprises, especially high-tech enterprises. In the community of management practitioners, this phenomenon involves the effective management of the enterprise development based on new, advanced technologies, whereas in the community of management theorists, this involves a research construct that explains the development processes of these enterprises, and also involves working on the creation of theory foundations. Both points of view – the pragmatic one, which is characteristic of high-tech enterprise managers, and the theoretical one, adequate to management theorists – share a common feature, i.e. the need to make useful instruments in order to rationalize the strategic management processes of high-tech enterprises. The instruments made during the research process by theorists should be useful for managerial work.

The critical epistemological research carried out in the frame of the research project³ allowed for the assignment of the technology entrepreneurship phenomenon to management

³ Kordel P.: Opracowanie w zakresie przedsiębiorczości technologicznej w kontekście rozwoju organizacji. Analiza literatury i synteza istniejącego stanu wiedzy. Materiał wewnętrzny opracowany w ramach projektu NCN, pt. Przedsiębiorczość technologiczna i rozwój organizacji, Zabrze 2014.

sciences – in the light of theories of entrepreneurship⁴, innovation⁵, dynamic capabilities⁶, a configuration approach to the development processes of the organization⁷, and the concept of the high performance organization⁸. The first three theory notions are the foundations for the creation of the research construct of technology entrepreneurship as the development mechanism of the organization. The configuration approach explains the entrepreneurial nature of the development processes of the organization, whereas the concept of the high performance organization explains the phenomenon of achieving above-average development parameters by entrepreneurial organizations.

Taking into account the above-mentioned theoretical foundations of the technology entrepreneurship phenomenon on the basis of management sciences, this phenomenon can be defined as a dynamic capability of the organization in the area of finding/creating and using technology opportunities. The creation of innovative product portfolios and entrepreneurial business models are the two main fields of managerial activity in the frame of the technology entrepreneurship process. The dynamics of this process is stepwise, and is the outcome of the co-development of the organization and its surroundings. It consists of generating the so-called punctuated equilibrium states by managers. These states are understood as the configuration of strategy, leadership, and organizational structure. The technology entrepreneurship process that is configured effectively is the key component of achieving above-average development parameters by high-tech enterprises.

The analysis of development trajectories of the organization in the frame of entrepreneurship theory assumptions is based on the process logic of achieving punctuated equilibrium states. This means that, according to the logic, organizations do not develop in a continuous or linear manner, but rather stepwise. They “jump” between punctuated equilibrium states. In the context of the configuration approach, the organizational equilibrium states are understood as adjustments. In the context of the technology entrepreneurship analysis as the development mechanism of the organization and recognizing an opportunity as the central category of this development, the logic of punctuated equilibrium states corresponds closely to the concept of the so-called window of technology opportunity (see the following figure).

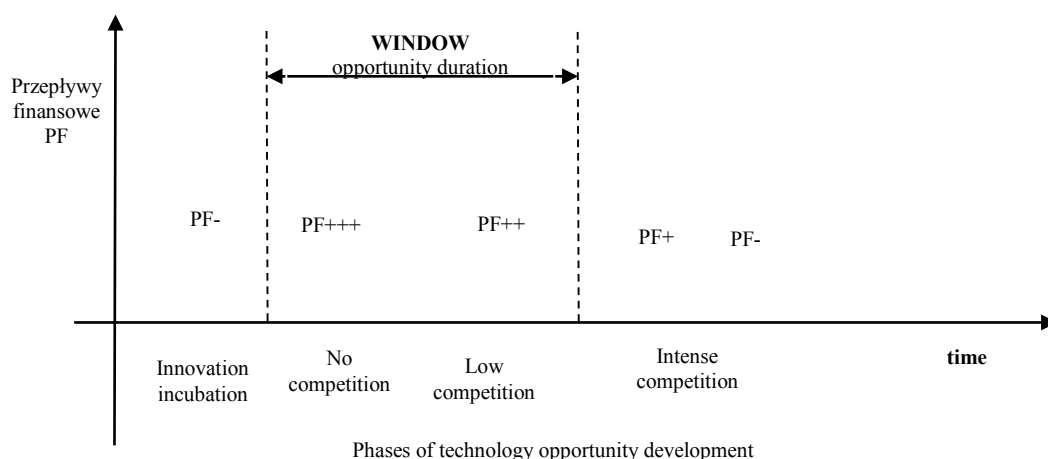
⁴ Kuratko D.: *Entrepreneurship: Theory, process and practice*. Cengage Learning, 2013.

⁵ Sengupta J.: *Theory of Innovation*. Springer International Publishing, 2014.

⁶ Ambrosini V., Bowman C., Collier N.: *Dynamic Capabilities: An Exploration of How Firms Renew Their Resource Base*. “British Journal of Management”, No. 20, 2009, p. 9-24.

⁷ Bratnicki M.: *Metodologiczne podejście do sprawdzania teorii przedsiębiorczych konfiguracji*. „Przegląd Organizacji”, nr 4, 2009.

⁸ De Waal A.A.: *Characteristics of high performance organisations*. “Business Management and Strategy”, No. 3, 2012, p. 28-45.



Key: PF- – negative financial flows; PF+++ – high positive financial flows; PF++ – average positive cash flows; PF+ – low positive cash flows.

Fig. 2. The concept of window of opportunity

Rys. 2. Koncepcja okna szansy

Source: Bayless M., Chaplinsky S.: Is there a window of opportunity for seasoned equity issuance? "Journal of Finance", 1996, p. 253-278.

The window of technology opportunity means that the entrepreneur may put his/her product on the market only during a given period of time. Competition is marginal and the return on sales is high at the beginning of the period, but at the end of the period competition is significant and the return on sales decreases. Therefore, time dynamics is an underlying characteristic of the development opportunity. The proper timing of technology opportunity formulation and exploitation is of major importance from the point of view of the effectiveness of this process. For example, the strategy of a technological leader involves coming into the market at the beginning of the window of technology opportunity, whereas the strategy of technological imitation involves putting products on the market at the end of this window. The former has a high risk but ensures high positive financial flows, while the latter has a lower risk but forces enterprises to compete and, therefore, provides much lower returns on sales.

3. Creativity and entrepreneurial organizational behaviors

Organizational entrepreneurship is often permeated by creativity, which, according to M. West, involves associations – the use of knowledge from other branches in order to create new, original ideas and solutions in the work process⁹. It was noticed that entrepreneurial

⁹ West M.: Rozwijanie kreatywności wewnątrz organizacji. PWN, Warszawa 2008.

organizations display creativity¹⁰. Researchers increasingly regard creativity itself as an important strategic element of the organization, which may constitute an important source of building competitive advantage^{11,12,13,14}. This, in turn, may result in achieving high performance by the organization¹⁵. Along with knowledge, creativity is often regarded as a necessary condition for entrepreneurship, understood as noticing, assessing and using opportunities¹⁶. It is also increasingly thought that creativity creates a new perspective of looking at the development of the current economy as one undergoing a transformation from a knowledge-based economy into a creative economy¹⁷.

In recent years a serious interest in creativity has been observed, both from the scientific point of view and the point of view of business practice. Creativity is sought in order to find effective methods of conducting business activities and generating new ideas concerning the improvement of products and processes implemented. In this context, the technological creativity category is becoming more important, which mainly underlies the area of entrepreneurship and innovation theories in the area of management sciences. Entrepreneurship and innovation theories may take different paths in the frame of management sciences, but they correspond with each other¹⁸. The focus on technology development is what differentiates technological creativity from a holistic sphere of creativity.

The current literary works regarding technological creativity is very fragmented and inconsistent, which poses an interesting research challenge in management sciences. The technological creativity construct is a combination of two categories: organizational creativity and technology development. The definition of technological creativity has been defined in the literature by several researchers and refers to technological thought and activity¹⁹. Technological creativity is defined as measures that allow people to apply science in a quicker and better way and therefore improve the quality of life, especially when

¹⁰ Politis J., Politis D.: Virtual leadership, entrepreneurial orientation, creativity and productivity, [in:] *Leading from the edge*. JCSB, Wellington 2012.

¹¹ Dyduch W.: *Twórcza strategia organizacji*. Uniwersytet Ekonomiczny, Katowice 2013.

¹² Bratnicka K.: *Kultura organizacyjna i twórczość w przedsiębiorczych organizacjach – model koncepcyjny*. „Przegląd Organizacji”, 2010.

¹³ Shalley C.E., Zhou J., Oldham G.R.: The effects of personal and contextual characteristics on creativity: where should we go from here? “*Journal of Management*”, No. 30(6), 2004.

¹⁴ Woodman R., Sawyer J., Griffin R.: Toward a Theory of Organizational Creativity. “*Academy of Management Review*”, No. 18, 1993.

¹⁵ Weinzimmer L.G., Michel E.J., Franczak J.L.: Creativity and Firm-Level Performance: The Mediating Effects of Action Orientation. “*Journal of Managerial Issues*”, No. 21(1), 2011.

¹⁶ Lumpkin G.T., Lichtenstein B.B.: The Role of Organizational Learning in the Opportunity – Recognition Process. “*Entrepreneurship, Theory & Practice*”, No. 60(3), 2005.

¹⁷ Fanea-Ivanovici M.: Urban Revitalisation in the Creative Economy and the Development of the Creative Society. “*Theoretical and Applied Economics*”, No. 10(587), 2013.

¹⁸ Drucker P.: *Innovation and Entrepreneurship: Practice and Principles*. Butterworth-Heinemann, 2007.

¹⁹ Hyunjin Kwon, Changyol Ryu: *Model of Technological Creativity Based on the Perceptions of Technology-Related Experts*. Daejeon Technical High School, Chungnam National University, Korea, www.aichi-edu.ac.jp/intro/files/seika05_2, 22.02.2015.

knowledge plays a more important²⁰. Here the key element is innovation, referring mainly to the technological sphere, i.e. product innovation and process innovation.

Table 1

Features of creativity-oriented organizations in the configuration approach

Organizational areas in the context of the configuration approach	Technological creativity
Managerial leadership	<ul style="list-style-type: none"> - ability to motivate - creative leader features - ability to use managerial instruments - ability to learn and create new knowledge - open-mindedness - ability to resolve issues - ability to synthesize - ability to co-operate - openness to employees' ideas - acceptance of some risk - independence support
Organizational strategy	<ul style="list-style-type: none"> - treating creativity as a causative factor of organizational development - accepting creativity as an organizational value - organizational objectives aim at creating new knowledge - an inspiring vision is outlined - managers' and employees' creativity aims as the objectives of the company - the organization is focused on constantly finding new, creative ways of achieving goals
Organizational structure	<ul style="list-style-type: none"> - decentralization and flexibility of the organizational structure - no fixed rules of stratification - free flow of information and knowledge - using creative techniques of generating ideas and resolving issues - work environment that favors creativity, develops passions and interests of employees - systems motivating employees to create ideas - organizational culture that favors technological creativity - teamwork
Surroundings	<ul style="list-style-type: none"> - competitive pressure - social recognition of creators and creativity - an education system that rewards creativity - teaching creative thinking and developing the ability to work creatively (education) - environment that favors creativity - recognition of knowledge and creativity as the driving force of economic development - technological development

Source: Machnik-Słomka J.: The role of technological creativity in entrepreneurial development of high-technology organizations in the context of a configuration approach, [in:] Skorupko D., Fieger M. (eds.): Scientific problems in project management. General Tadeusz Kosciuszko Military Academy of Land Forces in Wrocław. Department of Management. Wyższa Szkoła Oficerska Wojsk Lądowych, Wrocław 2015.

²⁰ Yu-Chu Y., Jing-Jui W.: The Cognitive Processes of Pupils Technological Creativity. "Creativity Research Journal", No. 18, 2008.

The features of creativity-oriented organizations were presented in relation to the category of technological creativity in the context of a configuration approach. In compliance with the configuration approach, these features were assigned to four areas, i.e. managerial leadership, organizational strategy, organizational structure, and surroundings. The following table shows the features of creativity-oriented organizations in the context of the configuration approach.

4. Positive orientation and entrepreneurial organizational behaviors

Entrepreneurship and innovation are rooted in tradition and culture, which has to be taken into account while forming the basis of competitiveness (this phenomenon may have a positive effect if a change in a specialized manufacturing process in a given area is based on ('based on' doesn't seem right here – How can a change in a manufacturing process be *based on* products that have been...? **Suggestion to put inside brackets** {} : *This phenomenon may have a positive effect if a change in a specialized manufacturing process is based in a given area having a tradition of such manufacture*) products that have been manufactured there). On the other hand, difficulties may arise if there are radical changes in the way products are manufactured or in the social culture, thus causing a rejection phenomenon. The social dimension of the innovation process is visible in the capability of a given organization to change cultural patterns incrementally. It is necessary to create and maintain good relationships within employee groups, especially when new and very innovative projects are undertaken. Innovations are also processes of creative destruction (creative destruction? Some elaboration on what is meant by creative destruction can be of use here), which entail not only their external social dimension, but also their devastating impact on the internal structures of the enterprise. Therefore, the implementation of product innovations has to be achieved along with the simultaneous, or even quicker, implementation of management method and organizational changes, especially in relation to the staff resources of the organization. A long and complex innovation development cycle is difficult to predict a priori, which means that its duration is an individual attribute of every instance of innovation and cannot be standardized. Therefore, there is a possibility of depreciation resulting from rapid advances in knowledge and changing market needs. Innovative activities are expensive and risky, which is the result of innovative process features alone, such as uniqueness, a relatively long period of freeze, or irregularity. Expenditure increases with the progress of the intention of innovation specification, whereas the risk increases when the project is pioneering and prospective in character. The minimization of the risk cannot only entail simple risk calculation methods in a traditional economic modelling. As the complexity of implementation processes and the flexibility of structures

increase, transaction costs and opportunity costs, resulting straight from the devaluation of resources based on human, social, and intellectual capitals, should not be omitted.

Considering the elements at individual and organizational levels, a need to relate entrepreneurial development to the positive potential of the organization arises, especially in relation to leadership, the structure, and relations with the surroundings. The focus on the organization not as a set of problems to deal with but rather as a “secret” that is to be uncovered allows for a better interpretation of the organizational phenomena that could not be investigated by means of traditional approaches and techniques²¹. The positive potential of the organization creates a sort of new way of thinking of organizations. While taking into account the occurrence of nepotism, corruption, egoism, manipulation, lack of trust, mobbing, and discrimination, the positive potential of the organization translates into the use of elements such as recognition, co-operation, trust, credibility, vitality, giving sense, loyalty, respect, and honesty.

The elimination of weak points does not always involve the support of development potential. Reinforcing advantages and the focus on strong point development give a chance of making decisions based on better foundations in workgroups. Research shows that when employees observe positive (civic) behaviors in other employees (e.g. sharing knowledge, loyalty, care) and turn them into their own behaviors, trust is developed and social capital, which is shaped in the organization, increases. This whole type of process fosters a more innovative organizational culture. Prosocial behavior is when people behave in such a way as to benefit other people. Motivation based on mutuality and emotional exchange relationship allows us to function more intensively, utilitarian and to perceive such actions as a benefit at the same time²².

With a more intense exploration of the character and complexity of management processes, the characteristics of organization resources has evolved. Traditional, mechanistic recognition of work and physical capital does not reflect the situation and complexity of enterprises in the globalized economy. Currently, the resource system is perceived as a collection of multi-element, tangible and intangible assets, which, depending on many changing circumstances, are used to achieve the assumed objectives as effectively as possible. The completion of the configuration of changing resources leads to the analysis of social capital behavior as a development factor not only in relation to physical capital, but as a leading factor in relation to the adaptation to the complexity and dynamics of the turbulent, globalized surroundings. Social capital, as understood from the organization’s point of view, is generated by organizational capital and human capital, which is based on competences. In order for social

²¹ Zbierowski P.: Źródła sukcesu organizacji – wyniki badań. Kwartalnik Naukowy „Organizacja i Zarządzanie”, nr 2(6), Politechnika Śląska, Gliwice 2009.

²² McNeely B.L., Meglino B.M.: The role of dispositional and situational antecedents in prosocial organizational behavior: and examination of the intended beneficiaries or prosocial behavior. “Journal of Applied Psychology”, 1994.

capital to become of important value in the frame of the positive potential of the organization, the conditions of developing proper interpersonal relationships have to be fulfilled. This, in turn, involves a proper level of interpersonal trust and the effect of trust on establishing intra-organizational standards ingrained in the organizational culture. As social capital (relational) can also be generated in pathological activities, even illegal, the adjective “positive” has been introduced in order to convey the character and meaning of social capital in the frame of the positive concept of the organization. Positive social capital is the element that increases the creative potential of individuals and of an organizational society as a whole. Its components are not only trust and a system of generated interpersonal relationships, but also behaviors based on kindness, altruism and generosity, which stimulate a sense of contentment, gratefulness, openness to change and ability to absorb new ideas.

Leadership plays a key role in the frame of positive orientation. The problem of leadership in organizations is one of the most important questions posed in the current organization and management sciences. The description of the essence of leadership and its phenomenon still seems incomplete, leaves a lot to be desired in terms of additional analyses and conclusions, and opens the possibility to formulate new theories and analytical models. Attempts to define leadership can also be found in social psychology. Leadership is readiness, perceived by other members of the organization, to exert or simply exerting influence on thoughts, emotions and actions of the members of the organization that are connected to the organizational objectives.

At the same time, leadership may be one of the most essential elements that build the success of the organization. Effective leaders can often prepare organizations for different surrounding challenges, invigorate them, reactivate them, or create completely different entities. No or inappropriate leadership in some situations may lead, even in a short time, well-functioning organizations to a crisis, the effects of which are difficult to overcome. Therefore, understanding leadership is extremely important for contemporary science, as well as for business practice.

Conclusion

Enterprises of the modern economy come across increasingly complex problems, which have caused difficulties when the globalization process started and geopolitical conditions were subject to smooth transformations. Today, the rationality of the decision-making process, managerial efficiency, and entrepreneurial inspirations are found useful not only in simple organizational resources, such as experience, specialist knowledge, or knowledge acquired, but also in elements that cannot be fully measured, such as creativity, intelligent reaction to surrounding challenges, or complex relationships in a multilayer organizational culture.

The choice of positive orientation in management allows for the reinforcement of employees' competitive attributes, minimization of social costs and the understanding of the entrepreneurial opportunities in relation to parametrically identified risk. At the same time, increasing stakeholders' demands mean that the organization cannot use only stereotypical and reactive managerial methods.

The research model presented in this article concerning entrepreneurial organizational behaviors, which is comprised of technological entrepreneurship, technological creativity and positive orientation of the organization categories, will be (shouldn't *has been* be used instead of *will be*?) verified in the frame of the empirical research being conducted.

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