

Joanna MACHNIK-SŁOMKA
Silesian University of Technology
Faculty of Organization and Management
Institute of Management and Administration

THE KEY ROLE OF LEADERSHIP IN THE FORMATION OF CREATIVITY IN HIGH TECHNOLOGY ENTERPRISES

Summary. The article discusses the role of leadership as a key factor affecting the development of creativity in the high-tech enterprises. In this context, basing on the analysis of the literature, the article presents the leadership styles which are particularly important for the development of creativity in contemporary high-tech enterprises. The article presents the results of research conducted within the project relating to the area of leadership in high-tech enterprises of the aviation industry. The area of executive leadership refers primarily to the analysis of the role of the leader of the organization, and the qualities and skills which a leader should have in motivating and stimulating the creative behavior of employees.

Keywords: leadership, creativity, high-tech enterprise

KLUCZOWA ROLA PRZYWÓDZTWA W KSZTAŁTOWANIU TWÓRCZOŚCI W PRZEDSIĘBIORSTWACH WYSOKICH TECHNOLOGII

Streszczenie. W artykule omówiono rolę przywództwa jako kluczowego czynnika, mającego wpływ na kształtowanie twórczości w przedsiębiorstwach wysokich technologii. W tym kontekście opierając się na analizie literaturowej przedstawiono style przywódcze, mające szczególne znaczenie dla kształtowania twórczości we współczesnych przedsiębiorstwach wysokich technologii. W artykule zaprezentowano wyniki badań prowadzonych w ramach projektu odnoszące się do obszaru przywództwa w przedsiębiorstwach wysokich technologii branży lotniczej. Obszar przywództwa menedżerskiego odnosił się przede wszystkim do analizy roli lidera, menedżera organizacji oraz cech i umiejętności, jakie powinien posiadać przywódca w motywowaniu i pobudzaniu twórczych zachowań pracowników.

Słowa kluczowe: przywództwo, twórczość, przedsiębiorstwa wysokich technologii

1. Introduction

Contemporary high-tech companies face a number of challenges affecting their performance. The formation of appropriate creative behaviors and relations within an organization considerably affects their development. Creativity in management sciences is usually analyzed in the context of innovation and entrepreneurship, seen as a more effective way of running a business and generating new ideas¹. Therefore, creativity plays an important role in the functioning of high-tech companies as their development is largely determined by the effectiveness of creating ideas and implementing innovations.

In this respect, the role of leadership is particularly important. Leadership is a multidimensional and complex issue that has been subject to different interpretations and approaches. The perception of the role and significance of a leader has been changing in recent years. In the traditional approach, leadership was seen a gift that only a few people received. At present, many researchers, theoreticians, and practitioners highlight the necessity to take into account a whole spectrum of different aspects and styles of leadership, which requires the application of new approaches and concepts to leadership².

H. Mintzberg emphasizes that leadership is one of the most important competitive advantages of companies and means more than just good management³. What distinguishes a true leader from an ordinary manager is the capability to continuously adapt to changes inside and outside a company⁴. R. Griffin defines leadership as a “set of processes used to make the members of a company cooperate in the interest of the organization”⁵. T. Rostkowski, in turn, emphasizes the approach to leadership as a competence making it possible to continually obtain full involvement of the supporters and use their potential which guarantees the adoption of measures towards the common objectives⁶. The key role played by a leader in the dissemination and implementation of their vision and ideas as well as motivating and involving the employees may be exemplified by many leaders and managers of companies such as Steve Jobs (Apple, Pixar), Bill Gates (Microsoft) or Jack Welch (GE).

The aim of this article is to present the role of leadership as a key factor affecting the formation of creativity in high-tech companies, basing on the analysis of the relevant literature and the results of the research performed within the project “Przedsiębiorczość

¹ Machnik-Słomka J.: Zachowania twórcze w organizacjach wysokich technologii. Zeszyty Naukowe, s. Zarządzanie, z. 19, Jędrzejczyk W., Ulewicz R. (red.). Wydział Zarządzania, Politechnika Częstochowska, Częstochowa 2015, p. 216-228.

² Tidd J., Bessant J.: Zarządzanie innowacjami. Integracja zmian technologicznych, rynkowych i organizacyjnych. Oficyna a Wolters Kluwer business, Warszawa 2013.

³ Mintzberg H.: Praca menedżera – fakty i mity, [in:] Przywództwo. Helion, Gliwice 2005, p. 12.

⁴ Owczarek M.: Przywództwo jako proces. Harvard Business Review Polska, nr 12, 2009, p. 122.

⁵ Griffin R.: Podstawy zarządzania organizacjami. PWN, Warszawa 1996, p. 43.

⁶ Rostkowski T.: Strategia zarządzania kapitałem ludzkim organizacji wiedzy, [in:] Juchnowicz M. (eds.): Elastyczne zarządzanie kapitałem ludzkim w organizacji wiedzy. Difin, Warszawa 2007, p. 98.

technologiczna i rozwój organizacji” [Technological entrepreneurship and the development of organisations] financed by the Polish National Science Centre (2012/07/B/HS4/03128). The research constituted a part of a comprehensive research project executed within the project.

2. Leadership as a key factor in supporting creative activity in high-tech enterprises

Leadership is one of the key factors affecting the development of high-tech enterprises. The special character of these enterprises poses new challenges to the leaders, managers and other responsible people in these organizations. There are many definitions describing high-tech enterprises, but it is not easy to find full coherence of these organizations. One might consider an entity to be a high-tech enterprise if it combines the features of an enterprise which is innovative, based on knowledge and wide use of information and communication technologies⁷, and which operates in fields recognized as high technology, or manufactures products classified as high technology (belonging to the high-tech sector e.g. according to the OECD classification or Eurostat). In the European Commission report⁸, high-tech enterprises are defined as enterprises which are highly innovative and/or operate in the area of research and development and/or use comprehensive production technology.

Creativity is an important development mechanism of contemporary enterprises and therefore an important interdisciplinary subject of research that is increasingly present in management sciences^{9,10,11,12}. A creative approach facilitates solving organizational problems; it motivates and encourages employees to introduce innovative solutions, and also supports better teamwork¹³. The essence of a creatively-oriented organization in the skillful use of the mental processes of a person, team and the level of an organization as a collective mind”¹⁴.

⁷ Adamik A., Zakrzewska-Bielawska A.: Rozwój przedsiębiorstw high-tech, [in:] Zakrzewska-Bielawska A. (eds.): Koopetycja w rozwoju przedsiębiorstw high-tech. Determinanty i dynamika. Placet, Warszawa 2014, p. 17.

⁸ Wysokińska Z.: Konkurencyjność w międzynarodowym i globalnym handlu technologiami. PWN, Warszawa-Łódź 2001, p. 173.

⁹ Woodman R., Sawyer J., Griffin R.: Toward a Theory of Organizational Creativity. “Academy of Management Review”, No. 18, 1993, p. 293-321.

¹⁰ 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, p. 933-58.

¹¹ Dyduch W.: Twórcza strategia organizacji. Uniwersytet Ekonomiczny, Katowice 2013, p. 17.

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

¹³ Machnik-Słomka J.: op.cit.

¹⁴ Brzeziński M.: Inżynieria kreatywnej organizacji. „Ekonomika i Organizacja Przedsiębiorstwa”, No. 8, 2004, p. 45.

Creativity plays a significant role in this respect, with a huge impact on creative processes in organizations, learning and knowledge-sharing processes, generating new ideas and also taking a team effort to implement them. Managers and leaders should encourage leaders to create and develop new ideas using traditional and non-traditional tools, create a climate for innovation and employ innovative people¹⁵. Literature identifies different attitudes and leadership styles which affect the formation of creativity and an increase in innovativeness: from traditional, conventional leadership to creative, lateral leadership^{16,17}.

A typical leader usually concentrates on action, results, effectiveness and continuous improvement, whereas a creative leader focuses on inspiring a team to look for new, better ways of doing things (Zarządzanie kreatywnością..., 2005)¹⁸. Creative leaders are more focused on developing employees' creativity and innovativeness. A certain degree of leaders' insight, which allows solving problems and processing information, is not insignificant for the results achieved by teams working on new solutions. This insight should be one of the basic qualities of creative leadership¹⁹. P. Sloane highlights the role of the so-called lateral leaders, claiming that "lateral leaders inspire and train their teams so that they can become a truly creative force and therefore achieve breakthrough solutions which previously seemed unachievable"²⁰.

However, J. Tidd and J. Bessant argue that a creative leader must do much more than perform passive duties of a person supporting and inspiring their co-workers²¹. The perception of leaders' technical qualifications is particularly important in the work of research teams. R.T Keller, in turn, demonstrated evidence that transformational leadership provides better prospects for the success of research work performed within projects²². Transformational leadership has more impact on the results achieved in a research environment than in performing administrative functions or development work, requiring operation in the areas of greater complexity, uncertainty, and novelty²³. Due to the important role of teamwork for innovative and creative activity, what may be important is leadership closely related to clear team objectives, high level of involvement, willingness to improve

¹⁵ Zarządzanie kreatywnością i innowacją. Harvard Business Essentials. MT Biznes, Konstancin-Jeziorna 2005.

¹⁶ Sloane P.: Twórcze myślenie w zarządzaniu. Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2003.

¹⁷ Tidd J., Bessant J.: Zarządzanie innowacjami. Integracja zmian technologicznych, rynkowych i organizacyjnych. Oficyna a Wolters Kluwer business, Warszawa 2013.

¹⁸ Zarządzanie...

¹⁹ Tidd J., Bessant J.: op.cit., p. 158.

²⁰ Sloane P.: op.cit.

²¹ Tidd J., Bessant J.: op.cit., p. 161.

²² Keller R.T.: Transformational leadership and performance of research and development project groups. "Journal of Management", No. 18, 1992, p. 489-501.

²³ Tidd J., Bessant J.: op.cit., p. 161.

and the support for innovation²⁴. The choice of a specific leadership style should therefore depend on the nature and type of tasks performed in enterprises.

Within the model of leadership in innovation which builds upon the professional experience, enriched by ideas in the change and innovation management and personal qualities and elements of social psychology, J. Tidd, J. Bessant²⁵ propose a multidimensional approach to leadership.

According to these authors, the most important tasks of the leader include the creation of an atmosphere that supports innovativeness. Leaders should aim to create a proper climate for innovation supporting, *inter alia*, cooperation in teams based on trust. Trust, according to J. Stachowicz and A. Stachowicz-Stanusch, is built on the credibility of partners, which in turn is constructed on the basis of adherence to and multiplication of moral values²⁶.

What may help a leader in conducting creative activity in teams is, according to M. Brzeziński, a creative management style enhancing involvement, consolidating “the spirit of teamwork” and communication embedded in human relations patterns²⁷. M. Brzeziński claims that the art of the creative style of personnel management consists largely of identifying the strengths and weaknesses of people and looking for creative means to take advantage of their assets; likewise, Steve Jobs claimed that innovativeness is not about money but about the people you have at your disposal, it is about the results and how much do you understand²⁸. In this respect, it is important to select employees who have relevant skills, capabilities, talents, and personality traits.

Particularly important for the formation of creativity and innovativeness is the intelligence and wisdom of an organization’s leader^{29,30,31,32}. Intelligence may be defined as “the ability to adapt to circumstances, as a result of perceiving abstract relationships, using previous relationships, and effectively controlling one’s own cognitive processes”³³. Many authors, i.e. D. Goleman, D.R. Caruso and P. Solovey, A. Carr, M. Brzeziński, H. Bieniok, argue that an important factor for achieving success is not so much general intelligence but

²⁴ West M.A., Borrill C.S., Dawson J.F., Brodbeck F., Shapiro D.A., Haward B.: Leadership clarity and team innovation in health care. “The Leadership Quarterly”, No. 14(4-5), 2003, p. 393-410.

²⁵ Tidd J., Bessant J.: op.cit., p. 155-156.

²⁶ Stachowicz J., Stachowicz-Stanusch A.: Klasty – współczesną i przyszłościową formą organizacji potęgującej wiedzę i wartości. „Organizacja i Zarządzanie”, No. 4, 2011, p. 7-35.

²⁷ Brzeziński M.: Organizacja kreatywna. PWN, Warszawa 2009, p. 95.

²⁸ Tidd J., Bessant J.: op.cit.

²⁹ Bieniok H.: Kreatywność jako źródło nowoczesności i rozwoju przedsiębiorstw. Zeszyty Naukowe, s. „Organizacja i Zarządzanie”, Vol. 73, Politechnika Śląska, Gliwice 2014, p. 50.

³⁰ Stachowicz J.: Podejście sieciowe (paradygmat sieciowy) w naukach zarządzania; założenia oraz konsekwencje dla praktyki zarządzania, [in:] Stachowicz J., Nowicka-Skowron M., Voronina A. (eds.): Rozwój organizacji i regionu wyzwaniem dla ekonomii i nauk o zarządzaniu. “Dom Organizatora”, Lublin-Toruń 2014, p. 402.

³¹ Brzeziński M.: op.cit.

³² Dźwigoł-Barosz M.: Rola inteligencji emocjonalnej lidera biznesu. Zeszyty Naukowe, s. „Organizacja i Zarządzanie”, Vol. 83. Politechnika Śląska, Gliwice 2015, p. 50.

³³ Nęcka E.: Inteligencja: Struktura – geneza – funkcje. Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2003.

rather so-called emotional intelligence which may be defined as the ability to recognize and manage one's own emotions as well as other people's emotions³⁴. This fits the principle, presented by A. Kukliński, of the new paradigm for the modern economy based on wisdom³⁵. M. Brzeziński claims that integrating all types of intelligence (intellectual, emotional and spiritual) into the processes of creative thinking and doing things and also balancing two worlds – the worlds of science and practice, as well supporting the combination of chaos and order, is connected with management based on conscious leadership³⁶.

The effectiveness of leadership therefore depends on many factors. M. Brzeziński claims that these factors include:

- management styles
- experience and theoretical styles
- personality and the aptitude for being a leader
- ability to work in a team
- ability to influence employees
- responsibility, etc.³⁷

The authors emphasize that the impact of many of these factors increases at the pace at which managers and subordinates mature to perform their roles.

3. The role of leadership in the formation of creativity in high-tech enterprises. The example of the aviation industry in light of research

The analysis of the role of leadership in forming creativity in high-tech aviation enterprises was the subject of empirical research conducted within the project. The research was qualitative, based on six case studies of high-tech organizations with different development models. In accordance with the project assumptions, the research took into account two models of high-tech organizations with respect to different stages of their development: start-up companies and incumbent companies³⁸. In these companies, the perception of managers was studied using the interview method. In order to construct a specific system of parameters or effectiveness measures, the concepts of a high-performance organization – characterized by an above-average growth path – was taken into

³⁴ Bieniok H.: op.cit., p. 50.

³⁵ Cf. PWN Dictionary of the Polish Language [Słownik Języka Polskiego PWN], <http://sjp.pwn.pl>.

³⁶ Brzeziński M.: op.cit., p. 98.

³⁷ Ibidem, p. 103.

³⁸ Kordel P.: Przedsiębiorczość technologiczna w ujęciu konfiguracyjnym, [in:] Świadek A., Wiśniewska J. (eds.): Innowacje we współczesnej gospodarce. Naukowe Wydawnictwo IVG, Szczecin 2014, p. 100.

account³⁹. The research used the configuration approach⁴⁰, in light of which the success of an organization depends on the mutual interaction of different internal and external factors. In accordance with this approach the factors were divided into four mutually interacting areas (leadership, organization, strategy, and environment). One of the four research areas was managerial leadership primarily related to the role of the leader, the manager of an organization and the qualities and skills which a leader should have when motivating and stimulating creative behaviors of the employees so that the organization can develop as a creative organization.

The research took into account the construct of technological creativity, the combination of the concepts of organizational creativity and technological development, which takes on greater significance in regard to the features of high-tech organizations. The definition of technology creativity has been determined in literature by several researchers and applied to technological thinking and technological activity⁴¹. Technological activity is defined as the means enabling people to apply science in a better and faster way and as a result to improve the quality of life, particularly at a time when knowledge plays an increasing role⁴². Therefore, what makes technology creativity different from the entire area of creativity is the focus mainly on technological thinking, technological activity, and technological development⁴³. Technology creativity is a special case of creative behaviors of managers and work teams, and also of high-tech organizations, in which creatively constituted technological innovations become the major force behind the construction and development of modern enterprises as well as the creation of market values⁴⁴.

As demonstrated by the research, an important role of leaders in high-technology enterprises, particularly in regard to the innovation process (generating ideas, research, design, certification), is to look for and achieve consensus and also to build internal and external relations, including relations with decision-makers, institutions, companies, subcontractors and designers. As emphasized by the surveyed managers, an important issue concerning the process of the manufacture and certification of planes is a high level of awareness of all participants in this process, the fact that “we are all trying to achieve the same goal”. The most important thing in this process is the role of the leader, who should, on the one hand, have technical, engineering knowledge and, on the other hand, have awareness

³⁹ De Waal A.A.: Characteristics of high performance organisations. “Business Management and Strategy”, No. 1, 2010, p. 28-45.

⁴⁰ Miller D.: Configurations Revisited. “Strategic Management Journal”, Vol. 17, No. 7, 1996, p. 505-512.

⁴¹ 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 February 2015.

⁴² Yu-Chu Yeh, Jing-Jui Wu: The cognitive processes of pupils technological creativity. “Creativity Research Journal”, Vol. 18, No. 2, 2006, p. 213-227.

⁴³ Machnik-Słomka J.: op.cit., p. 216-228.

⁴⁴ Ibidem.

and a sense of responsibility for the process as well as the results of the research, which must often be repeated if it does not bring the expected results. In teamwork, an important leader's skill is to motivate and involve all participants in the process of research and idea creation as well as the implementation and commercialization of solutions. As demonstrated by the research concerning technology creativity, understood as a special case of creative behaviors of the leader, the team of employees and the entire organization in the start-up model of companies, an essential role is played by technology creativity of the leader. In incumbent companies however, the leader's role is to a greater degree focused on strengthening technology creativity of work teams and entire organizations.

The surveyed managers of aviation companies emphasized the great impact of the environment on creative behaviors of leaders and employees in these organizations. It concerns, in particular, the phenomena present in the legal, political and economic spheres but also in the social and technological spheres. It is because the environment may strengthen or limit creativity and creative behaviors in organizations. The research shows that the environment of aviation companies is perceived by the leaders as a hostile environment, limiting creativity and own research, and development activity. In particular, the legal and political environment is defined, by the leaders of the surveyed companies in the sector of the manufacturers of ultralight airplanes, as factors which do not support creativity, doing own research on the design of these airplanes (including their certification and maintenance). Examples of the surveyed aviation companies characterized by effectiveness show that the role of the leader, their commitment, and determination, despite adverse conditions, in particular, adverse legal and institutional conditions, is of great significance and has a great impact on the development of companies and implemented projects. The leaders of the surveyed successful companies usually have the qualities of both conventional and creative leaders. Such a role of leaders is perceived by many researchers, such as P. Sloane, who claims that leaders should, on the one hand, inspire and motivate employees (creative leaders) and, on the other hand, should know when to place emphasis on effectiveness and results (conventional leaders). Likewise, J. Tidd and J. Bessant highlight the fact that in an uncertain environment the role of leaders is not only to inspire and build trust but also to solve problems and make appropriate strategic decisions.

In the relevant literature, one may encounter different concepts describing the qualities that leaders should have. On the basis of the analysis of literature and the research results, Table 1 presents a list of leaders' qualities that seem particularly important in the context of the formation of creativity in high-tech enterprises.

Table 1

Leader's qualities in relation to high-tech organizations

	Leader's qualities
Managerial leadership	<ul style="list-style-type: none"> - technical, engineering knowledge - the knowledge of the industry and legal regulations - intelligence (in particular emotional intelligence), wisdom - visionariness - ability to cooperate and build internal and external relationships - motivating the employees to think creatively, generate and propose ideas - insight in solving problems creatively - skillful application of managerial tools - focusing activities on the determined objectives and priorities - accepting risks - openness to employees' ideas and supporting them

Source: Own study.

The presented qualities that leaders should have do not fully reflect the image of a good leader. As many authors emphasize, including J. Tidd and J. Bessant⁴⁵, R.D. Mann⁴⁶, there is no universal style of a leader and an invariable list of qualities that leaders should have.

Summary

The future of high-tech organizations is largely determined by leaders, who, due to appropriate behavior contribute to the formation of employees' creativity.

The presented research results and the analysis of literature indicate that leaders supporting creativity in high-tech enterprises should take into account different leadership styles: from the traditional transformation leadership to the creative, lateral leadership, depending on the type of performed task. In high-tech enterprises, in particular, leaders should, on the one hand, be characterized by a creative approach to management, encouraging and motivating employees to act creatively in innovative processes and, on the other hand, focus on achieving the intended objectives and effects. In particular, in high-tech enterprises, they should be characterized by, *inter alia*, technical, engineering knowledge, competencies in management, high level of emotional intelligence, the ability to present a vision, inspire employees and the ability to create a climate that supports the creative work of teams. Leaders' abilities to build internal and external relationships have a great impact on creative and innovative processes in the surveyed companies. The conducted interviews show that the leaders' use of network relationships and cooperation based on trust are significant.

⁴⁵ Tidd J., Bessant J.: op.cit.

⁴⁶ Mann R.D.: A review of the relationships between personality and performance in small groups. "Psychological Bulletin", No. 56, 1959, p. 241-270.

In modern companies, which have increasingly flat and network-based organizational structures with a limited number of managers, the significance of leadership is growing. Leaders who apply unconventional ways of thinking and acting are becoming the main driving force behind the creativity and development of these organizations.

Bibliography

1. Adamik A., Zakrzewska-Bielawska A.: Rozwój przedsiębiorstw high-tech, [in:] Zakrzewska-Bielawska A. (eds.): Koopetycja w rozwoju przedsiębiorstw high-tech. Determinanty i dynamika. Placet, Warszawa 2014.
2. Bieniok H.: Kreatywność jako źródło nowoczesności i rozwoju przedsiębiorstw. Zeszyty Naukowe, s. Organizacja i Zarządzanie, Vol. 7. Politechnika Śląska, Gliwice 2014.
3. Bratnicka K.: Kultura organizacyjna i twórczość w przedsiębiorczych organizacjach – model koncepcyjny. “Przegląd Organizacji”, 2010.
4. Brzeziński M.: Inżynieria kreatywnej organizacji. “Ekonomika i Organizacja Przedsiębiorstwa”, No. 8, 2004.
5. Brzeziński M.: Organizacja kreatywna. PWN, Warszawa 2009.
6. Carr A.: Psychologia pozytywna. Zysk i S-ka, Poznań 2009.
7. De Waal A.A.: Characteristics of high performance organisations. “Business Management and Strategy”, No. 1, 2010.
8. Dyduch W.: Twórcza strategia organizacji. Uniwersytet Ekonomiczny, Katowice 2013.
9. Dźwigoł-Barosz M.: Rola inteligencji emocjonalnej lidera biznesu. Zeszyty Naukowe, s. Organizacja i Zarządzanie, Vol. 83. Politechnika Śląska, Gliwice 2015.
10. Griffin R.: Podstawy zarządzania organizacjami. PWN, Warszawa 1996.
11. 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, 2 February 2015.
12. Keller R.T.: Transformational leadership and performance of research and development project groups. “Journal of Management”, No. 18, 1992.
13. Kordel P.: Przedsiębiorczość technologiczna w ujęciu konfiguracyjnym, [in:] Świadek A., Wiśniewska J. (eds.): Innowacje we współczesnej gospodarce. Naukowe Wydawnictwo IVG, Szczecin 2014.
14. Kukliński A.: Program przyszłości regionów. Ministerstwo Rozwoju Regionalnego, Warszawa 2000.
15. Machnik-Słomka J.: Zachowania twórcze w organizacjach wysokich technologii. Zeszyty Naukowe, s. Zarządzanie, z. 19, Jędrzejczyk W., Ulewicz R. (red.). Wydział Zarządzania, Politechnika Częstochowska, Częstochowa 2015.

16. Machnik-Słomka J., Kordel P.: Zjawisko przedsiębiorczości technologicznej w przedsiębiorstwach branży lotniczej w Polsce w świetle analiz statystycznych, [in:] Wszendybył-Skulska E. (eds.): *Innowacyjność współczesnych organizacji. Wybrane aspekty.* Towarzystwo Naukowe Organizacji i Kierownictwa – Stowarzyszenie Wyższej Użyteczności "Dom Organizatora", Toruń 2016.
17. Mann R.D.: A review of the relationships between personality and performance in small groups. "Psychological Bulletin", No. 56, 1959.
18. Miller D.: Configurations Revisited. "Strategic Management Journal", Vol. 17, No. 7, 1996.
19. Mintzberg H.: Praca menedżera – fakty i mity, [in:] *Przywództwo.* Helion, Gliwice 2005.
20. Nęcka E.: *Inteligencja: Struktura – geneza – funkcje.* Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2003.
21. Owczarek M.: Przywództwo jako proces. "Harvard Business Review Polska", No. 12, 2009.
22. Rostkowski T.: Strategia zarządzania kapitałem ludzkim organizacji wiedzy, [in:] Juchnowicz M. (eds.): *Elastyczne zarządzanie kapitałem ludzkim w organizacji wiedzy.* Difin, Warszawa 2007.
23. 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.
24. Sloane P.: *Twórcze myślenie w zarządzaniu.* Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2003.
25. Stachowicz J., Stachowicz-Stanusch A.: Klastry – współczesną i przyszłościową formą organizacji potęgującej wiedzę i wartości. "Organizacja i Zarządzanie", No. 4, 2011.
26. Stachowicz J.: Podejście sieciowe (paradygmat sieciowy) w naukach zarządzania; założenia oraz konsekwencje dla praktyki zarządzania, [in:] Stachowicz J., Nowicka-Skowron M., Voronina A. (eds.): *Rozwój organizacji i regionu wyzwaniem dla ekonomii i nauk o zarządzaniu.* "Dom Organizatora", Lublin-Toruń 2014.
27. PWN Dictionary of the Polish Language [Słownik Języka Polskiego PWN], <http://sjp.pwn.pl>.
28. Tidd J., Bessant J.: *Zarządzanie innowacjami. Integracja zmian technologicznych, rynkowych i organizacyjnych.* Oficyna a Wolters Kluwer business, Warszawa 2013.
29. West M.A., Borrill C.S., Dawson J.F., Brodbeck F., Shapiro D.A., Haward B.: Leadership clarity and team innovation in health care. "The Leadership Quarterly", No. 14(4-5), 2003.
30. Woodman R., Sawyer J., Griffin R.: Toward a Theory of Organizational Creativity. "Academy of Management Review", No. 18, 1993.
31. Wysokińska Z.: *Konkurencyjność w międzynarodowym i globalnym handlu technologiami.* PWN, Warszawa, Łódź 2001.

-
32. Yu-Chu Yeh, Jing-Jui Wu: The cognitive processes of pupils technological creativity. "Creativity Research Journal", Vol. 18, No. 2, 2006.
 33. Zarządzanie kreatywnością i innowacją. Harvard Business Essentials, MT Biznes, Konstancin-Jeziorna 2005.