Uniwersytet Ekonomiczny w Katowicach

Studia Ekonomiczne. Zeszyty Naukowe
Uniwersytetu Ekonomicznego w Katowicach
ISSN 2083-8611 Nr 234 · 2015

**Celina M. Olszak**

Uniwersytet Ekonomiczny w Katowicach
Wydział Ekonomii
Katedra Informatyki Ekonomicznej
celina.olszak@ue.katowice.pl

**Tomasz Bartuś**

Uniwersytet Ekonomiczny w Katowicach
Wydział Ekonomii
Katedra Informatyki Ekonomicznej
tomasz.bartus@ue.katowice.pl

**Paweł Lorek**

Uniwersytet Ekonomiczny w Katowicach
Wydział Ekonomii
Katedra Informatyki Ekonomicznej
pawel.lorek@ue.katowice.pl

# SELECTED ISSUES IN DESIGN OF IT-ENABLED ORGANIZATIONAL CREATIVITY SUPPORT

**Summary:** The issue of organizational creativity support is still insufficiently investigated. The research studies are fragmentary and do not present how to design organizational creativity support system. The main purpose of this paper is to propose a framework based on multi-agent approach for organizational creativity support. The idea of the study is an attempt to answer the following questions: (1) what is the issue of organizational creativity and its computer support, (2) what are the properties of multi-agent technology, (3) how to use multi-agent technology to build organizational creativity support system. The framework proposed consists of different agents that can independently acquire, monitor, analyze a variety of data that come from different, heterogeneous, dispersed information sources as well as to suggest new ideas concerning some products and services in organizations. The results of testing and verifying of the framework were presented on the example of one the price comparison websites.

**Keywords:** organizational creativity; organizational creativity support; multi-agent approach.

## Introduction and motivation for the study

Although, the studies on IT-enabled creativity have been developing from three decades, they have not concerned the essence of organizational creativity support. They have been mainly focused on creative problem solving, creative

processes or individual and group creativity support systems. The issue of organizational creativity support is still insufficiently investigated and the research studies are fragmentary, scattered. There is a lack of principles, rules and examples how to design organizational creativity support systems. The main purpose of this paper is to propose a framework based on multi-agent approach for organizational creativity support. The idea of the study is an attempt to answer the following questions: (1) what is the issue of organizational creativity and its computer support, (2) what are the properties of multi-agent approach, (3) how to use multi-agent technology to build organizational creativity support system. Search for answers to these questions is mainly conducted on the theoretical, methodological as well as the empirical foundation. At the start, a critical review literature was drawn to identify the organizational creativity issue as well as to explore multi-agent approach. The search for the appropriate literature began with different bibliographic database, e.g., EBESCOhost, Emerald Management 75, ISI Web of Knowledge, ProQuest and Scopus. Additionally, the open access papers were explored. Next, the used research methods were described. Finally, the idea of multi-agent framework for organizational creativity support was proposed. The results of testing and verifying of such system, on the example of one the price comparison websites, were demonstrated. In conclusion we summarize the key points of our study and give directions for future research.

## 1. Related works

### 1.1. Organizational creativity issue

The concept of creativity has been widely discussed over last decades in various disciplines including psychology, sociology, organizational behaviors and information systems [Amabile, 1988; Woodman, Sawyer, Griffin, 1993; Cooper, 2000; Styhre, 2005; Khedhaouria and Belbaly, 2011]. It is therefore not surprising that the term of "*creativity*" is very different explained. One of the most cited definition of creativity says that the outcome of creativity are ideas that are distinguished by novelty and usability [Ambile, 1983; Kaoo, 1989]. Many authors highlight that these ideas are used to achieve some particular aims [Pucio, Mance, Murdoch, 2011] and they have a significant impact [Ariel and Sagiv, 2011]. Some authors advocate that creativity means creation something new what is based on exploration different information resources (data bases and knowledge bases) [Baron, 2012]. Creativity is compared to knowledge system [Basadur, Basdur and Licina, 2012] used for solving different problems and increasing of organizational effectiveness [Houghton and DiLiello, 2010]. It is highlighted that creativity is crucial in solving of semi-structured or un-structured problems [Mumford and Medeiros, 2012].

It is worth mentioning, that the term of "*organizational creativity*", in contrast to the term of "*creativity*" which is rooted in psychology, is strong associated with strategic management, business strategies and competitive advantage. According to many scholars [Gong, Haung, Farh, 2009; Klijn and Tomic, 2010; Choi, Madjar and Yun, 2010; Zhou and Ren, 2012] organizational creativity means the capability to generate new and useful ideas that concern some products, services, processes, managerial practices as well as competitive strategies.

A new look at the issue of organizational creativity opens within Resource-Based View – RBV. RBV argues that about the success of organization's strategy decides the configuration of its resources and capabilities that are the basis to build key competences. Acquiring, configuration, reconfiguration and developing of available resources is critical factor for taking the competitive advantage and creating the value [Barney, 1995; Wade and Hulland, 2004; Cosic, Shankes, Maynard, 2012]. In an extended approach of RBV resources implies intangible categories including organizational, human and networks [Ahn and York, 2011].

## 1.2. Creativity in information systems domain

While other disciplines have paid a particular attention to the creativity subject, it appears that IS discipline has paid relatively little attention to issues related the creativity [Seidel, Muller-Wienbergen and Becker, 2010; Olszak, 2015]. Existing creativity research tracks on IS were based on methods, techniques and tools, requirements and strategies for diffusing them and support systems for individuals and groups [Khedhaouria and Balbaly, 2011]. These research tracks imply that there was an urgent need to use and develop a comprehensive creativity model for IS discipline [Cooper, 2000]. The scholars [Seidel, Muller-Wienbergen, Becker, 2010; Seidel and Rosman, 2008] find 4-P model to be the most used general creativity framework. This model is composed of creativity processes, creativity persons, creativity products and creativity press or environment. In IS, the studies related to the 4-P model, concentrate mainly on creative products and creative processes [Tiwana and McLean, 2005]. It is reported that 4-P model alone is not enough embody the role of a comprehensive creativity model. In the literature there are presented two another creativity models [Amabile, 1988; Khedhaouria and Belbaly, 2011; Woodman, Sawyer and Griffin, 1993]: the interactions model of organizational creativity and the componential model of theory organizational creativity.

Cooper [2000] has made a significant contribution to the creativity, especially to creativity required for IT-enabled organizational reengineering in order to help managers and researchers understand how to foster such creativity. His model was adopted from organizational theory and used to develop propositions regarding organizational characteristics that can foster IT development creativity in organizations. The author asserts that IT requirements and logical design result from group characteristics, such as the tasks, norms, diversity and problem solving approach as well as from characteristics of individuals in the group, such as cognitive factors, motivation and knowledge. Individual and group characteristics are affected by contextual influence, which result from organizational characteristics such as culture, resources and rewards.

Process-oriented perspective is very often used to describe the creativity phenomenon in IS domain. Voigt and Bergener [2013] stated that creative processes are understood as interactive interplay of divergence and convergence. They advocate that creativity is a phenomenon occurring in the interplay of person and its socio-cultural context. Creative group processes are collaborative effort of a group to generate and evaluate ideas. A particular subset of group support systems that support creative group processes are group creativity support systems (GCSS). In contrast to individual creativity support systems, they include several types of information systems, e.g., group decision support systems, knowledge management systems, computer-mediated communication, which commonly support the process of idea generation and idea evolution and selection in groups.

Seidel and Rosemann [2008] have introduced the notion of creativity-intensive processes and pockets of creativity as new BPM concept. In this context, they have distinguished and described creative tasks within business processes including: allocating resources, enhancing creativity, managing creativity risks and enhancing process performance.

Tiwana and McLean [2005] have examined creativity during IS development process. They have argued that development of IS is a creative effort that involves the expertise, insights, and skills of many individuals. The organizations need to develop systems for novel business applications and new problem domains.

To sum up, we consider that there is a lack of proposition of organizational creativity support system as well as some approaches and guidelines how to design it. This paper fills a cognitive gap in this area.

## 1.3. Agent technology

Seeking an appropriate technology to design and build organizational creativity support different technologies and approaches were investigated [Olszak, Bartuś, 2015]. We decided to use multi-agent approach. Some properties of this approach, presented bellow, decided on such choice. According to some scholars [Woldridge, 2009; Weynes, 2010], the agent is an entity that performs some actions in a particular environment and is aware of the emerging changes. Moreover, it can react to such changes [Thomsen, 2002; Rudowsky, 2004]. The agent has a set of goals, certain capabilities to perform actions, and some knowledge (or beliefs) about its environment [Wag, Wang, 2005]. In addition, Thomsen [2002] describes the agent as "a solution-oriented ensemble of capabilities including natural language processing, autonomous reasoning, proactive computing, discourse modeling, knowledge representation, action-oriented semantics, multimodal interaction, environmental awareness, self awareness, and distributed architectures". Many authors emphasize the specific properties of the agents [Franklinand and Graesser, 1996; Woldridge, 2009; Sterling and Taveter, 2010; Olszak, Bartuś, 2013]. They include: autonomy, reactivity, pro-activity, social ability, self-analysis, learning, temporally continuous. Other properties sometimes mentioned in the context of agents include [Rudowsky, 2004]: mobility, veracity, benevolence, rationality.

However, it has already been pointed out that the capacity of an intelligent agent is limited by its knowledge, its computing resources, and its perspective. Therefore, it is required forming communities (agency) of agents. These communities, based on a modular design, can be implemented, where each member of the agency specializes in solving a particular aspect of the problem. The agents must be able to interoperate and coordinate with each other in peer-to-peer interactions. This idea of the agents' operation is nowadays described as a multi-agent system. A multi-agent system can be defined as a loosely coupled network of entities that work together to solve a problem that cannot be solved by an individual agent. These entities can show self-organization and complex behavior, even if the individual agent's strategies are simple [Bologa and Bologa, 2011]. Multi-agent system is a network of agents that are reasoning (problem solvers) and cooperating, communicating and negotiating to achieve a specific task. Individual agents are able to adapt their behavior to the changing environment in which they work [Weynes, 2010].

The following characteristics of the agent technology lead to the conclusion that this technology can be widely used in business and in different organizations. Particularly, it provides some extension and alternative to organizational creativity support with flexible, distributed and intelligent features.

## 2. Research methods

A design of organizational creativity support system was grounded in three theories: (1) Hevner's et al. [2004] design science in information systems research, (2) multi-agent approach and (3) organizational creativity from perspective of strategic RBV and dynamic organization's capabilities [Olszak and Bartuś, 2015] (Fig. 1).

The design process of proposed system was based on paradigms and rules presented by Hevner et al. [2004] that concern the design science in information systems research [Peffers et al., 2008; Walles, Widmeyer, El Sawy, 2004]. They refer mainly how to conduct, evaluate and present design science research. These scholars advocated that design has dichotomous nature. It may be both a process (set of activities) and a product (artifact). The design process is a sequence of expert activities that produces an innovative product. Hevner et al. [2004] stated that there are different design evaluation methods. They include: observational (case study), analytical (static analysis, architecture analysis, optimization, dynamic analysis), experimental (controlled experiment and simulation), testing (functional and structural) and descriptive (informed argument and scenarios) methods. In our case, mainly experimental and descriptive methods were used. Controlled experiment and simulations were conducted as well as construct detailed scenarios were demonstrated. Proposed system was tested in web environment on the example of one the price comparison websites.

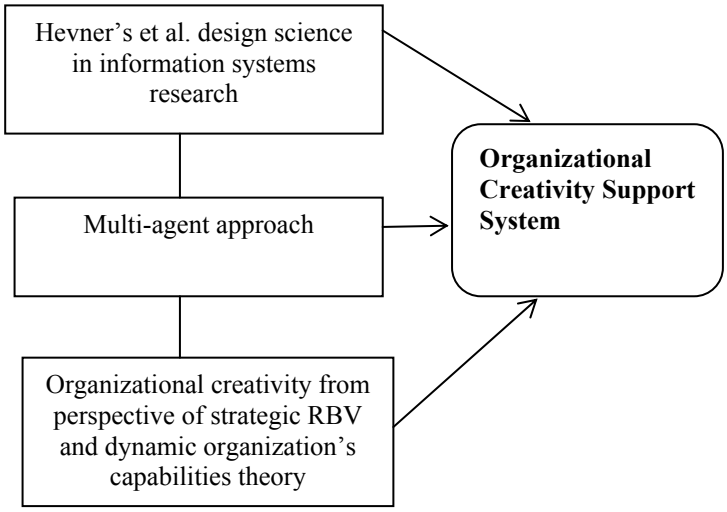


**Fig. 1.** The research framework

To design organizational creativity support system a multi-agent approach was used. As a result, a framework called multi-agent organizational creativity support system (MAOCSS) was built. The system is a network of agents that are reasoning, cooperating and communicating to achieve a specific task. Individual agents are able to adapt their behavior to the changing environment in which they work.

Acceptation of RBV and dynamic capability theories in our research means that the framework proposed should be able continuously to acquire various information resources and create from them new analysis/configurations that reflect organization's requirement and its changeable environment.

## 3. Findings and discussion

According to the assumptions explained in the section above, a system called a multi-agent organizational creativity support system (MAOCSS) was built (Fig. 2). Designing MAOCSS it was assumed that MAOCSS should be flexible enough to allow: (1) automatic acquisition and processing of various data originating from different resources (e.g., price comparison websites and social media), (2) optimization of individual agents tasks, (3) creation of new ideas that concern the development of new products, (4) transfer of the collected data to the different data bases, (5) further development of the framework (adding more agents) and (6) integration of the framework with other information systems.

MAOCSS consists of different agents: capturing agents, monitoring agents, creative ideas agents and manager agent. These agents are able to communicate with each other and activate mutually. They can independently acquire, monitor, analyze a variety of data that come from different, information sources as well as to suggest new ideas concerning some products and services.

The monitoring and capturing agents are responsible for monitoring and collecting data that concern some opinions (from social media and price comparison websites) on some features of the products/services. The latter group of agents is responsible for performing various analyzes that refer to some features of the products as well as the opinions of users, customers and competitors on some products. Manger agent enables the configuration and monitoring of the work of the whole system. A single agent of MAOCSS is attributed with functions, rules and methods to work in the specific domain (monitoring, capturing, analyzing, storing). Different techniques and tools were used to design each agent. They include mainly: cleaning data, web scraping techniques, web opinion mining, text mining, web mining, neural networks and search engines.

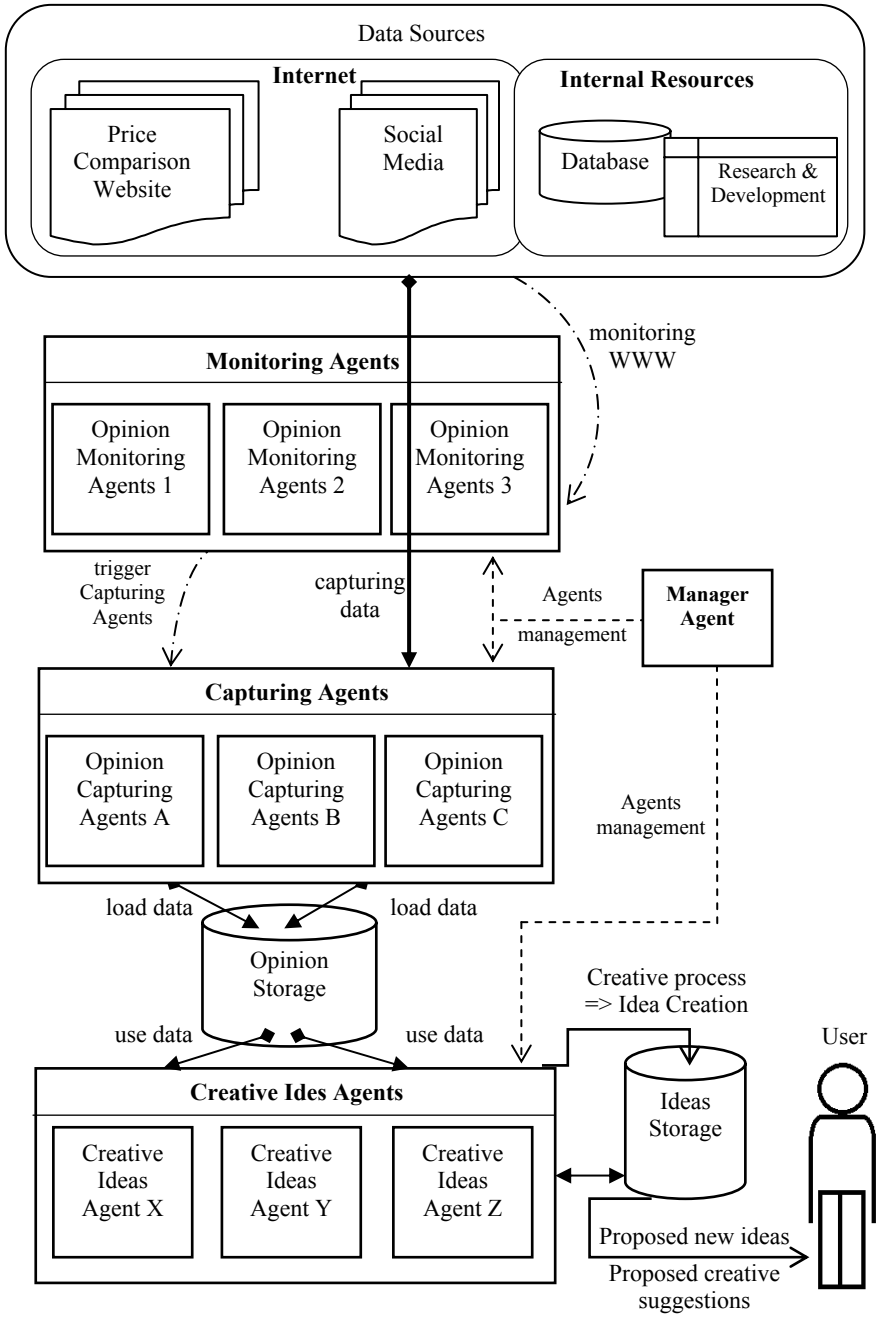


**Fig. 2.** The framework of MAOCSS

Source: Olszak, Bartuś [2015].

MAOCSS was tested and verified on the example of the price comparison website Ceneo.pl for one of the most popular smartphones. Social media and price comparison websites have become a valuable source of information. They are used by users to share their opinions about any products and services purchased. Exploration and analyses of such information may bring numerous benefits for organizations (e.g., more extensive knowledge of customers and satisfaction of their individual needs concerning new products and services). It may be the foundation to modify or create new products and services (Fig. 3).

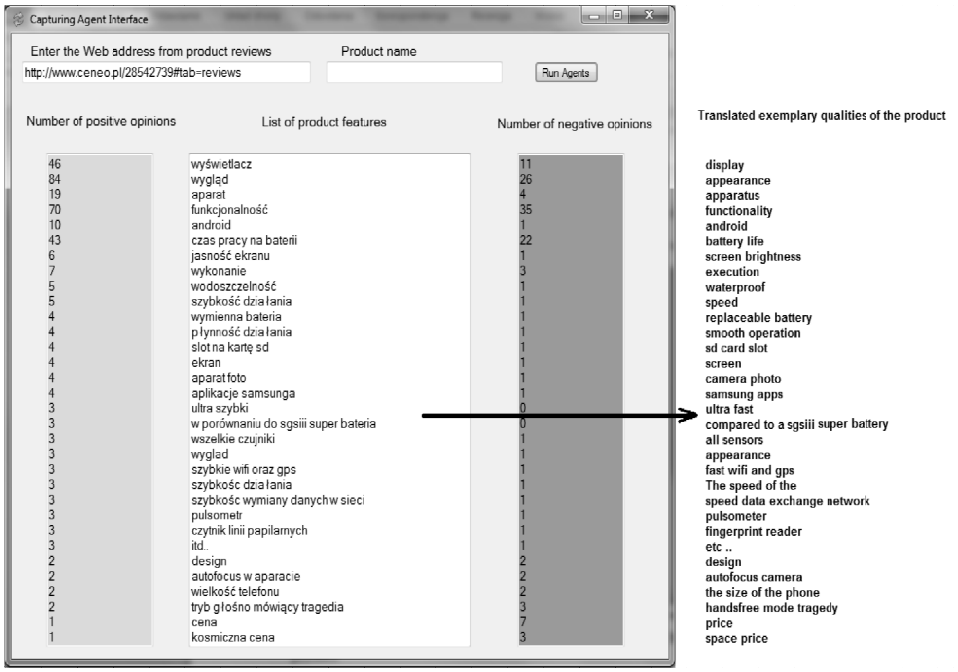


**Fig. 3.** Data captured by agents from price comparison website Ceneo.pl for selected product (smartphone)

Source: Olszak, Bartuś [2015].

The work of the MAOCSS may be described as follows: monitoring agent tracks the changes in opinions of the users on some products in selected price comparison website. These changes may refer to features of the products, opinions ("*positive*", "*negative*"). Monitoring the price comparison websites and social resources can run continuously or can be carried out in accordance with a specific timetable. When agent detects new content (e.g., new feature of the product, new opinion on the product) posted in the price comparison website or in social media, it sends a signal that activates the capturing agent. At this point,

it starts acquiring new contents from a particular social media or price comparison website and stores these contents in data base (storage). Acquiring agent mostly acquires certain keywords, phrases or files. Such data may concern features and opinions on the selected products ("*positive*", "*negative*") as well as on the products of competition.

Then, stored data are explored and analyzed by creative ideas agent. It is mainly responsible for identification correlations between the product features and the opinions on products ("*positive*", "*negative*") of some users. Creative ideas agent uses graph structures and visualization techniques. It means that after data has been acquired from the source file, such content is mapped (saved as) into undirected edge graph. A graph always has three major vertices (nods): a nod that means a product described, a nod that refers to advantages and a nod that refers to disadvantages. Other nods refer to terms that describe a product. Graph edges have their own weights. Weights of connections in the graph mean frequency a particular term appears. The more frequently appearing feature, the higher weight of the connection with a nod of advantages or disadvantages (Fig. 4). NetworkX 1.8.1 library was used in order to construct the graph structure. While the visualisation employs Gephi 0.8.2 library (Jacomy, et al., 2014). All operations involving data processing are performed in the Python 2.7 environment.

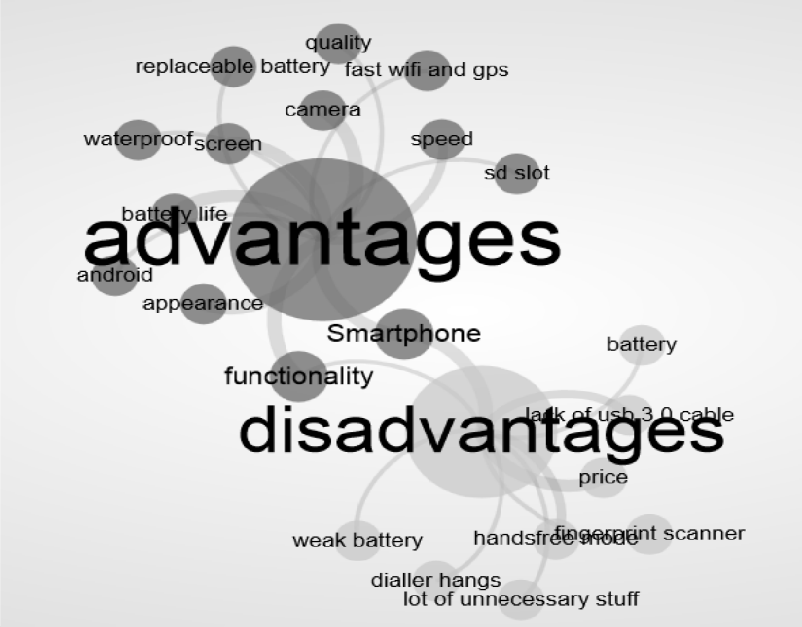


**Fig. 4.** Visualization of relationship between the features of selected product and the users opinions ("*positive*", "*negative*")

When testing MAOCSS we noticed some its advantages and disadvantages. Among the MAOCSS strengths there are:

- system flexibility allowing to extract data from any price comparison websites and social media;
- fast extraction of data on a selected social media profile;
- reduction of work resources (time, specialists) while acquiring, filtering, processing and sharing information from Internet resources;
- providing the organizations with relevant information (directly from customers, suppliers, competitors) about their interests, preferences that may be valuable for organizational creativity support.

MAOCSS weaknesses include:

- complex process of development, software and configuration of the agent system;
- the need to monitor and check the accuracy of the individual agents work, especially in the early stages of their work;
- the need to redesign the work of individual agents when changing the structures of web pages;
- unexpected server and ICT infrastructure downtime can destabilize the work of individual agents.

## Conclusion

The main conclusion of this study is reflected in the statement that multi-agent approach is an interesting and useful method for organizational creativity support system design. A developed and tested MAOCSS is an autonomous application consisting of a group of agents that independently acquire a number of important data that may be valuable for the support of organizational creativity. MACOSS can work with a variety of Internet resources e.g., social media, price comparison websites. It is able to collect a lot of data on the products (their features) and users opinions. The organizations can quickly respond to the opinions and attitudes of their current and future customers and also quickly assess the relevance of their marketing actions and decisions. In conclusion, we need to emphasize that the developed MACOSS should be further verified and tested.

The paper contributes the scientific foundation to enrich the knowledge in the area of organizational creativity and its computer support. It provides some valuable information on using a multi-agent approach for designing of organizational creativity support systems. The findings and outcomes should be useful for any designers of organizational creativity support systems and for all organizations willing to use these systems.

## Acknowledgments

This paper has been supported by a grant: „*Methodology for Computer Supported Organizational Creativity"* from National Science Centre in Poland, 2013/09B/HS4/00473.

## References

Ahn M.J., York A.S. (2011), *Resource-based and Institution-based approaches to Biotechnology Industry Development in Malaysia*, "Asia Pacific Journal of Management", Vol. 28(2), pp. 257-275.

Amabile T.M. (1983), *The Social Psychology of Creativity*, Springer-Verlag, New York.

Amabile T.M. (1988), *A Model of Creativity and Innovation in Organizations* [in:] B.M. Staw, L.L. Commungs (eds.), "Research in Organizational Behavior", Vol. 10, pp. 123-167.

Arieli S., Sagiv L. (2011), *Culture and Creativity: How Culture and Problem Type Interact in Affecting Problem Solving*, Proceedings of Academy of Management, San Antonio.

Barney J. (1995), *Looking Inside for Competitive Advantage*, "Academy of Management Executive", vol. 9, pp. 49-61.

Baron R.A. (2012), *Entrepreneurship. An Evidence-based Guide*, Edward Elgar, Cheltenham.

Basadur M., Basadur T., Licina G. (2012), *Organizational Development* [in:] M.D. Mumford (ed.), *Handbook of Organizational Creativity*, Academic Press/Elsevier, London/Waltham/San Diego, pp. 667–703.

Bologa A., Bologa R. (2011), *Business Intelligence Using Software Agents*, "Database Systems Journal", Vol. 2(4), pp. 31-42.

Choi W., Madjar N., Yun Y. (2010), *Perceived Organizational Support, Goal Orientation, Exchange Ideology and Creativity*, Proceedings of Academy of Management, Montreal.

Cooper R.B. (2000), *Information Technology Development Creativity: A Case Study of Attempted Radical Change*, "MIS Quarterly", Vol. 24(2), pp. 245-276.

Cosic R., Shanks G., Maynard S. (2012), *Towards a Business Analytics Capability Maturity Model* [in:] Proceedings of the 23 Australasian Conference on Information Systems, Geelong.

Franklin S., Graesser A. (1996), *Institute for Intelligent Systems*, University of Memphis Press, Memphis.

Gong Y.P., Huang J.C., Farh J.L. (2009), *Employee Learning Orientation, Transformational Leadership, and Employee Creativity: The Mediating Role of Creative Self--efficacy*, "Academy of Management Journal", Vol. 52, pp. 765-778.

Hevner A.R., March S.T., Park J., Ram S. (2004), *Design Science in Information Systems Research*, "MIS Quarterly", Vol. 28(1), pp. 75-105.

Houghton J.D., DiLiello T.C. (2010), *Leadership Development: The Key to Unlocking Individual Creativity in Organizations*, "Leadership & Organization Development Journal", Vol. 11, pp. 230-245.

Jacomy M., Venturini T., Heymann S., Bastian M. (2014), *ForceAtlas2, aContinous Graph Layout Algorithm for Handy Network Visualisation for the Gephi Software, PLoS ONE,* 9(6) 2014, http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0098679 (accessed: 10.01.2015).

Kao J.J. (1989), *Entrepreneurship, Creativity and Organization: Text, Cases and Readings*, Prentice Hall, Englewood Cliffs.

Khedhaouria A., Belbaly N. (2011), *Organizational Creativity Climate Factors: Lessons Learned from the French Energy Management Industry,* Proceedings of ECIS 2011, Paper 143.

Klijn M., Tomic W. (2010), *A Review of Creativity within Organizations from a Psychological Perspective*, "Journal of Management Development", Vol. 29, pp. 322-343.

Mumford M.D., Robledo I.C., Hester K.S. (2011), *Creativity, Innovation, and Leadership: Models and Findings* [in:] A. Bryman, D. Collinson, K. Grint, B. Jackson, M. Uhl-Bien (eds.), *The Sage Handbook of Leadership*, Sage, Los Angeles-London-New Delhi-Singapore-Washington, pp. 405-421.

Olszak C.M. (2015), *Komputerowe wspomaganie twórczości organizacyjnej. Wybrane problemy*. „Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach", nr 212, s. 110-123.

Olszak C., Bartuś T. (2015*), Multi-Agent Approach in Designing of Organizational Creativity Support* [in:] J. Q. Chen, D. Xinghua, W. Hu, R. Zhan (eds.), *IS Management and IS Engineering in the Era of Big Data*, Xi'an University of Technology, Published by Academic Conferences and Publishing International Limited Reading UK, pp. 93-102.

Olszak C.M., Bartuś T. (2013), *Multi-Agent Framework for Social Customer Relationship Management Systems* [in:] E. Cohen (ed.), *Issues in Informing Science and Information Technology*, Vol. 10, Informing Science Institute, Santa Rosa, pp. 368-387.

Peffers K., Tuunanen T., Rothenberger M.A., Chatterjee S. (2008), *A Design Science Research Methodology for Information Systems Research*, "Journal of Management Information Systems", Vol. 24(3), Winter 2007-2008, pp. 45-77.

Puccio G.J., Mance M., Murdoch M.C. (2011), *Creative Leadership. Skills That Change*, Sage, Thousand Oaks.

Rudowsky I. (2004), *Intelligent Agents*, Proceedings of the Americas Conference on Information Systems, New York.

Seidel S., Muller-Wienbergen F., Becker J. (2010), *The Concept of Creativity in the Information Systems Discipline*, "CAIS", Vol. 27(1), pp. 218-242.

Seidel S., Rosemann M. (2008), *Creativity Management – The New Challenge for BPM*, "BPTrends", May.

Sterling L., Taveter K. (2010), *The Art of Agent-Oriented Modeling*, The MIT Press Cambridge, London.

Styhre A., Sundgren M (2005), *Managing creativity in organizations: Critique and Practices,* Palgrave Macmillan, Houndmills.

Thomsen E. (2002), *Agents Uncovered*, "Intelligent Enterprise", Vol. 5(15), pp. 45.

Tiwana A., McLean E.R. (2005), *Expertise Integration and Creativity in Information Systems Development*, "Journal of Management Information Systems", Vol. 22(10), pp. 13-43.

Voigt M., Bergener K. (2013), *Enhancing Creativity in Groups – Proposition of and Integrated Framework for Designing Group Creativity Support Systems*, Proceedings of 46th Hawaii International Conference on System Sciences, IEEE Computer Society, pp. 225-234.

Walls J., Widmeyer G., El Sawy O. (2004), *Assesing Information System Design Theory in Perspective: How Useful Was Our 1992 Initial Rendition*?, "Journal of Information Technology Theory & Application", Vol. 6(2), pp. 43-58.

Wang M., Wang H. (2005), *Intelligent Agent Supported Business Process Management*, Proceedings of the 38th Hawaii International Conference on System Sciences.

Weyns D. (2010), *Architecture-Based Design of Multi-Agent Systems*, Springer-Verlag, Berlin Heidelberg.

Woodman R.W., Sawyer J.E., Griffin R.W. (1993), *Toward a theory of organizational creativity*, "Academy of Management Review*"*, Vol. 18(2), pp. 293-276.

Wooldridge M. (2009), *An Introduction to Multi Agent Systems,* John Wiley and Sons Ltd., New York.

Zhou J., Ren R. (2012), *Striving for Creativity. Building Positive Contexts in the Workplace* [in:] K.S. Cameron, G.M. Spreitzer (eds.), *The Oxford Handbook of Positive Scholarship*, Oxford Press, Oxford/New York, pp. 97-109.

## WYBRANE ZAGADNIENIA PROJEKTOWANIA KOMPUTEROWEGO WSPOMAGANIA TWÓRCZOŚCI ORGANIZACYJNEJ

**Streszczenie:** Pomimo że tematyka dotycząca twórczości rozwija się od wielu lat, to zagadnienie wspomagania twórczości organizacyjnej z udziałem IT jest słabo rozpoznane. Badania w tym zakresie są nieliczne, rozproszone i nie ilustrują, jak projektować systemy wspomagania twórczości organizacyjnej. Głównym celem niniejszego artykułu jest zaproponowanie modelu wspomagania twórczości organizacyjnej opartego na podejściu wieloagentowym. W opracowaniu starano się odpowiedzieć na następujące pytania: (1) na czym polega istota twórczości organizacyjnej i jej komputerowe wspomaganie, (2) jakie są właściwości technologii wieloagentowej, (3) jak zastosować technologię wieloagentową do budowy systemu wspomagania twórczości organizacyjnej. Rezulta-

tem przeprowadzonych badań jest model, który składa się z różnych agentów, którzy mogą niezależnie pozyskiwać, monitorować, analizować różnorodne informacje pochodzące z rozproszonych źródeł i na tej podstawie sugerować nowe pomysły, dotycząc produktów, usług, praktyk menedżerskich itp. Wyniki testowania modelu zostały zaprezentowane na przykładzie jednej z porównywarek cenowych.

**Słowa kluczowe:** twórczość organizacyjna; wspomaganie twórczości organizacyjnej; podejście wieloagentowe.