

Contents

1/2014

RESEARCH PAPERS	3	MATJAŽ MALETIČ, DAMJAN MALETIČ, JENS J. DAHLGAARD, SU MI DAHLGAARD-PARK, BOŠTJAN GOMIŠČEK	The Relationship between Sustainability-Oriented Innovation Practices and Organizational Performance: Empirical Evidence from Slovenian Organizations
	14	MIRJANA KLJAJIĆ BORŠTNAR, ANDREJA PUCIHAR	Impacts of the Implementation of a Project Management Information System – a Case Study of a Small R&D Company
	24	WŁODZIMIERZ SROKA, JOANNA CYGLER, BOŻENA GAJDZIK	The Transfer of Knowledge in Intra-Organizational Networks: A Case Study Analysis
	35	TATJANA KOZJEK, NINA TOMAŽEVIČ, JANEZ STARE	Work-Life Balance by Area, Actual Situation and Expectations – the Overlapping Opinions of Employers and Employees in Slovenia
	52	JOANNA KUROWSKA-PYSZ	Shaping of Competencies of Managers in Academic Incubators of Entrepreneurship in Poland
	66	ANDREJA KVAS, JANKO SELJAK, JANEZ STARE	Training Needs Assessment for Leaders in Nursing Based on Comparison of Competency Models

Editorial office: University of Maribor, Faculty of Organizational Science, Založba Moderna Organizacija, Kidričeva 55a, 4000 Kranj, Slovenia, Telephone: +386-4-2374226, E-mail: organizacija@fov.uni-mb.si, URL: <http://organizacija.fov.uni-mb.si>.

Published bimonthly. Full text of articles are available at <http://www.degruyter.com/view/j/orga> and <http://organizacija.fov.uni-mb.si>.

Papers for publication in Organizacija can be submitted via journal website at <http://organizacija.fov.uni-mb.si>. Before submission authors should consult Guidelines available at <http://www.degruyter.com/view/j/orga>. You can contact the editorial office via e-mail: organizacija@fov.uni-mb.si or joze.zupancic@fov.uni-mb.si.

Articles are currently abstracted/indexed in: Cabell's Directory, CEJSH (The Central European Journal of Social Sciences and Humanities), Celdes, CNPIEC, Die Elektronische Zeitschriftenbibliothek, DOAJ, EBSCO - TOC Premier, EBSCO Discovery Service, ECONIS, Ergonomics Abstracts, Google Scholar, Inspec, International Abstracts in Operations Research, J-Gate, Microsoft Academic Search, Naviga (Softweco), Primo Central (ExLibris), ProQuest - Advanced Polymers Abstracts, ProQuest - Aluminium Industry Abstracts, ProQuest - Ceramic Abstracts/World Ceramics Abstracts, ProQuest - Composites Industry Abstracts, ProQuest - Computer and Information Systems Abstracts, ProQuest - Corrosion Abstracts, ProQuest - Electronics and Communications Abstracts, ProQuest - Engineered Materials Abstracts, ProQuest - Mechanical & Transportation Engineering Abstracts, ProQuest - METADEX (Metals Abstracts), ProQuest - Sociological Abstracts, ProQuest - Solid State and Superconductivity Abstracts, Research Papers in Economics (RePEc), Summon (Serials Solutions/ProQuest), TDOne (TDNet), TEMA Technik und Management, WorldCat (OCLC)

EDITOR / UREDNIK

Jože Zupančič,
Univerza v Mariboru,
Fakulteta za organizacijske vede

CO-EDITORS / SOUREDNIKI

Marko Ferjan,
Univerza v Mariboru,
Fakulteta za organizacijske vede

Boštjan Gomišček,
Univerza v Mariboru,
Fakulteta za organizacijske vede

Jure Kovač
Univerza v Mariboru,
Fakulteta za organizacijske vede

Marjan Senegačnik
Univerza v Mariboru,
Fakulteta za organizacijske vede

**AREA EDITORS /
PODROČNI UREDNIKI**

Mojca Bernik
Alenka Brezavšček
Drago Mežnar
Marjan Senegačnik
Borut Werber

**EDITORIAL BOARD /
UREDNIŠKI ODBOR REVIJE**

Hossein Arsham,
University of Baltimore, USA

Roger Blanpain,
Catholic University of Leuven, Belgium

Franc Čuš,
University of Maribor, Slovenia

Vlado Dimovski,
University of Ljubljana, Slovenia

Daniel C. Ganster,
Colorado State University, USA

Jože Gričar,
University of Maribor, Slovenia

Werner Jammerneegg,
Vienna University of Economics and
Business Administration, Austria

Marius Alexander Janson,
University of Missouri-St. Louis, USA

Stefan Klein,
University of Münster, Germany

Mirosljub Kljajić,
University of Maribor, Slovenia

Aleksandar Marković,
University of Belgrade, Serbia

Hermann Maurer,
Technical University Graz, Austria

Matjaž Mulej,
University of Maribor, Slovenia

Valentinas Navickas,
Kaunas University of Technology,
Lithuania

Ota Novotny,
University of Economics, Prague,
Czech Republic

Milan Pagon,
Zayed University, Dubai,
United Arab Emirates

Bjorn Paape,
RWTH-Technical University Aachen,
Germany

Dušan Petrač,
NASA, Jet Propulsion Laboratory,
California Institute of Technology, USA

Hans Puxbaum,
Vienna University of Technology, Austria

Vladislav Rajkovič,
University of Maribor, Slovenia

Gábor Rekettye,
University of Pécs, Hungary

Henk G. Sol,
Faculty of Economics and Business,
University of Groningen, Netherlands

Velimir Srića,
University of Zagreb, Croatia

Paula Swatman,
University of Tasmania, Australia

Brian Timney,
The University of Western Ontario,
Canada

Maurice Yolles,
Liverpool John Moores University, UK

Douglas R. Vogel,
Harbin Institute of Technology–
HIT, School of Management, China

Gerhard-Wilhelm Weber,
Middle East Technical University, Turkey

Stanisław Wrycza,
University of Gdańsk, Poland

Hans-Dieter Zimmermann,
FSH St. Gallen University of Applied
Sciences, Switzerland

DOI: 10.2478/orga-2014-0001

The Relationship between Sustainability-Oriented Innovation Practices and Organizational Performance: Empirical Evidence from Slovenian Organizations

Matjaž Maletič¹, Damjan Maletič¹, Jens J. Dahlgaard², Su Mi Dahlgaard-Park³, Boštjan Gomišček^{1*}

¹University of Maribor, Faculty of Organizational Sciences, Kidričeva cesta 55a, SI-4000 Kranj, Slovenia; matjaz.maletic@fov.uni-mb.si, damjan.maletic@fov.uni-mb.si, bostjan.gomiscek@fov.uni-mb.si (corresponding author)

²Linköping University, Department of Management and Engineering, Sweden; jens.jorn.dahlgaard@liu.se

³Lund University, Department of Service Management, Sweden; Su_Mi.Dahlgaard-Park@ism.lu.se

Background and Purpose - The purpose of this paper is to empirically analyse the effects of sustainability-oriented innovation practices on the overall organizational performance. Further, this paper also aims to advance understanding of the measurement of corporate sustainability practices with the focus on innovation dimensions.

Design/Methodology/Approach - The study uses data obtained from a survey of 116 organizations encompassing both the manufacturing and service industries in Slovenia. Descriptive statistics were used in order to determine the level of sustainability-oriented innovation practices deployment. Exploratory factor analysis was applied to extract the underlying factors and to provide a basis for assessing their reliability and validity. In addition, regression analysis was used to quantify the effect of sustainability practices on the organizational performance.

Results - Data analysis result showed that sustainability-oriented innovation practices are significantly associated with organizational performance. Therefore, empirical evidence from this research confirmed the premise that building innovation competencies and integrating innovation activities in organization's processes lead to performance benefits. This contributes to the debate about the potential for organizations to be sustainable and competitive.

Conclusion - The presented research on corporate sustainability provides important theoretical and practical insights on which the deployment of sustainability-oriented innovation practices are conducive to fostering a broader set of performance benefits. As such, managers should increase organizations' capacity for innovation which can be beneficial in terms of performance implications and achieving sustainability goals.

Keywords: corporate sustainability, sustainability-oriented innovation, organizational performance, empirical study

1 Introduction

The role of business in society has been a concern both of scholars and practitioners for a long time (Salzmann et al., 2005). In this sense, Delai and Takahashi (2013) points out that sustainable development actions and initiatives have become vital aspects for any organization. A sustainable

organization is one that contributes to sustainable development by delivering simultaneously economic, social, and environmental benefits—the so-called triple bottom line (Hart and Milstein, 2003). Many authors have approached this issue by discussing the business case for corporate sustainability, including Dyllik and Hockerts (2002) and Salzmann et al. (2005). In general, the business case empha-

sises that business processes directed at achieving sustainable development sense are necessary for the financial growth of an organization. The business case for sustainability is often used to provide motivations for an organization to integrate aspects of sustainability into business processes (Asif et al., 2011).

In addition, many studies have discussed the business case for a sustainability innovation (e.g. Wagner, 2008). In this regard, the challenge for business is to develop innovation strategies in order to respond to needs and expectations of a wide array of stakeholders (Ayuso et al., 2006) and at the same time justify economic rationale behind these sustainability activities (Schaltegger and Wagner, 2006). Furthermore, van Kleef and Roome (2007) suggest that developing competencies that foster innovation for sustainable development can be perceived as the basis of competitiveness. For example, these competencies can enable organizations to offer products and services that create value for customers and to generate new products and services, and therefore adapting to rapidly changing environment faster than competitors (van Kleef and Roome, 2007).

An improved understanding of the link between sustainability-oriented innovation practices and organizational performance does not just contribute to a debate about the business case for sustainability (Schaltegger and Wagner, 2006), but also contribute to the knowledge of measuring sustainability-oriented innovation activities (Pujari, 2006). However, few studies have empirically investigated the specific organizational performance outcomes concerning sustainability-oriented innovation.

Thus, the following research question is addressed in this study: Can an organization benefit by creating and deploying sustainability-oriented innovation practices? Therefore, this study adds to the emerging dialogue on corporate sustainability by empirically investigating the performance benefits of business activities that are directed towards sustainability through innovation.

The paper is structured as follows: firstly, the literature review that underpinned this research and the methodology employed to carry it out are presented in sections 2 and 3, respectively. Then, in section 4 empirical evidence on the relation between sustainability-oriented innovation practices and organizational performance is presented. In section 5, we conclude with a discussion of the results, implications, and issues for further research.

2 Literature review

2.1 Sustainability practices

Recognizing the multi-dimensional nature of sustainability, a rapidly growing literature documents a wide range of specific sustainability practices being implemented by organizations (see, for example, Hahn and Scheermesser,

2006; Collins et al., 2010; Maletic et al., 2011; Fairfield et al., 2011). One key starting point in the debate on sustainability management is the inclusion of stakeholders and the integration of their respective demands (Seuring and Gold, 2013), which is suggested to be a critical process that helps organizations to understand their key environmental and social impacts (Rocha et al., 2007). As far as corporate environmentalism is concerned, considerable attention has been paid in the literature to the eco-efficiency (Côté et al., 2006) in terms of reducing energy and material intensity, utilizing renewable energy sources, and in the context of emissions reduction of pollutants and waste minimization. Furthermore, apart from talking the environmental problems, many other practices aim at creating more sustainable workplaces by focusing on worker health and safety aspects, employee engagement, equity as well as quality of life (e.g. Hutchins and Sutherland, 2008). Employee centred sustainability practices are also related to the sustainability oriented organizational learning (Siebenhuner and Anold, 2007). Recently, literature has paid attention to the sustainability-related innovation practices, predominantly through the search of the ways on how to manage product development in a more sustainable way (Hallstedt et al., 2013).

Therefore, a number of fields, such as corporate environmentalism, corporate social responsibility, stakeholder, stakeholder theory and sustainable development, have contributed to the expansion of corporate sustainability literature. Due to difficulties in defining the concept of corporate sustainability as well as the multidisciplinary nature of sustainability, there are different approaches in conceptualizing and operationalizing sustainability constructs. One of the most commonly used measures are derived from established sustainability indexes, such as the SAM Dow Jones Sustainability Index, the KLD Social Index or the GRI performance indicators. Most of these sustainability initiatives are developed as a normative frameworks or process guidelines (Ligteringen and Zadek, 2005).

2.2 Organizational performance

The concept of organizational performance in literature refers normally to financial aspects such as profit, return on assets (ROA), return on equity (ROE) and economic value added (EVA). While financial measures of performance are among the most widely used by businesses, many researchers have criticized the short-term thinking and emphasize the importance of the non-financial components of performance measurement (e.g. Kaplan, 1983; Otley, 1999). Consequently, as a response to relatively narrow point of view of performance measuring, a more balanced approaches of performance measurement systems (PMSs) to include financial and non-financial performance measures, as well as explaining cause-and-effect relationships between the various measures, and providing better insight in terms of links between PMS and organization's

strategy have been proposed (Kaplan and Norton, 1996; Neely and Adams, 2000). Thus the two most well-known and frequently used models for performance management – the balanced scorecard and the European Foundation for Quality Management's (EFQM) Excellent Model - reflect the development. The key in developing these models is to construct the multiple organizational performance measures so that they are properly integrated and directed towards achieving organizational goals and strategy. Various Quality models, among others, Deming model and Malcom Baldrige model are some forerunners of the integrated performance management models of which focuses were paid in multiple performance variables. In line with these developments, Gomes et al. (2011) further suggest that organizations should (among other performance measures) also pay attention to softer performance measures, such as social responsibility. Based on corporate social performance and corporate financial performance, Fauzi et al. (2010) proposed a multi-dimensional concept of triple bottom line (TBL) as sustainable corporate performance.

Considering the academic perspective, a number of studies have applied different ways to measure organizational performance. As a result, different measures of overall organizational performance have been used to the same phenomenon, i.e. overall organizational performance. The most frequently used measures of organizational performance in empirical studies are financial performance, market performance, quality performance, product innovation, process innovation, operational performance and customer satisfaction (e.g. Lin and Kuo, 2011; Antony and Bhattacharyya, 2010; Fuentes-Fuentes et al., 2004). As pointed out by Tangen (2003), different performance dimensions may have to be combined to get a balanced and complete view of the organization's performance. For instance, Venkatraman and Ramanujan (1986) consider three aspects of performance, among them are financial performance, business performance, and organizational effectiveness and the later have been subsequently known as organizational performance. They suggested that a broader conceptualisation of the organizational performance would (in addition to financial indicators) include operational indicators as well when measuring the organizational performance. The operational indicators may include such measures as new product introduction, product quality, manufacturing value-added and marketing effectiveness.

2.3 Sustainability and innovation

As stated by Klewitz and Hansen (2013), the debate on organizations that strive to achieve the goals of sustainable development through innovation was initially focused on eco-innovations. In general, one can argue that eco-innovations include several dimensions, such as: design dimensions, user dimensions, product service dimensions, governance dimensions and the engagement of key stakeholders

in the innovation process (Carrillo-Hermosilla et al., 2010). The ultimate goal of putting efforts to eco-innovations is to provide new business opportunities and contribute to a transformation towards a sustainable society (Carrillo-Hermosilla et al., 2010). Generally, eco-innovations can be divided in the three main categories, as follows (Rennings et al., 2006):

- *Process innovations* enable the production of a given amount of output (goods, services) with less input. The latter can be interpreted in terms of the eco-efficiency (Côté et al., 2006) which aims to reduce the material and energy intensity. Process innovations can be further subdivided into innovations in end-of-pipe technologies and innovation in integrated technologies categories (Rennings et al., 2006).
- *Product innovations* encompass the improvement of goods and services or the development of new goods categories (Rennings et al., 2006). It is suggested that most of the sustainability-oriented product/service innovations relate to incremental or evolutionary innovation (e.g. remanufactured products, recycled content, organic cotton-based clothing, and water-based paints) (Pujari, 2006).
- *Organizational innovations* include new forms of management systems. This could also include environmental management systems (Poksinska et al., 2003). More recently, the trend has moved towards holistic sustainability management system standards and guidelines (Maas and Reniers, 2013).

Lately, the debate on sustainability and innovation has expanded its focus to include a wide range of themes such as sustainability-related innovation (e.g. Wagner, 2008; Klewitz and Hansen, 2013), sustainable innovation (Boons et al., 2013), CSR-driven innovation (e.g. Hockerts, 2008) as well as the discussion regarding the development of more sustainable management systems (Maas and Reniers, 2013).

3 Methods

3.1 Sample and data collection

A survey questionnaire was mailed to the managers of a random sample of Slovenian organizations. To ensure a reasonable response rate, the survey was sent in two waves. The questionnaire with the cover letter indicating the purpose and significance of the study was emailed to target respondents. Managers were chosen because they were considered to be familiar with the implementation of sustainability practices and performance indicators.

A total of 116 usable responses were received from a sample of Slovenian organizations. The profile of the organizations and respondents is provided in Table 1.

Table 1. Profile of the respondents in our sample

Sample distribution	Percentage	
Respondent profile	Middle management	38.6
	Frontline management	22.8
	Top management	21.1
	Data not available	17.5
	Total	100 (N=116)
Organization profile (employees)	0–5	6.0
	5–50	18.1
	50–250	31.9
	250–500	9.5
	over 500	26.7
	Data not available	7.8
Total		100 (N = 114)

3.2 Measures

Independent variables: sustainability-oriented innovation practices. Although our study mostly used multi-item scales that were verified through various analyses, appropriate scale for sustainability-oriented innovation practices was not available. Hence, the domains of construct were identified via a thorough review of the literature. Several items were operationalized in relation to eco-innovation activities in product development process (e.g. Pujari, 2006), stakeholder integration in product development process (e.g. Seuring and Gold, 2013) as well as in relation to business process improvements (e.g. Côté et al., 2006).

The items measuring sustainability oriented learning and the development of competencies supporting innovation were developed based on the literature review related to sustainability and organizational learning (e.g. Lozano, 2011; Siebenhuner and Anold, 2007; van Kleef and Roome, 2007).

Therefore, a diverse range of operationalizations has emerged for the sustainability-oriented innovation practices. The complete items of these scales are presented in Table 2.

Dependent variable: organizational performance. While recognising that performance is multi-dimensional concept (Chenhall and Langfield-Smith, 2007), we designed our survey instrument to capture the most commonly studied dimensions of organizational performance. The organizational performance sub-constructs were operationalised by developing several items based on a literature review (e.g. Baird et al., 2011; Kaynak, 2003; Martensen et al., 2007; Prajogo and Sohal, 2003; Veleva and Ellenbecker, 2001; Hutchins and Sutherland, 2008). Therefore, we understand the concept of organizational performance to be composed of the following sub-constructs: financial and market performance, quality performance, innovation performance, environmental performance and social performance. A resulting

four-item scale captures the extent to which organizations achieve business success. A four-item scale measures quality performance and captures the extent to which organizations have improved quality of their products and services during the last 3 years and meet customer satisfaction. A four-item scale measures innovation performance in terms of product and process innovation. A four-item scale measures environmental performance and captures the extent to which organizations achieve efficiency of material and energy consumption. Finally, a four-item scale measures social performance from the employee perspective (satisfaction, motivation and turnover ratio). The corresponding items for measuring the organizational performance are presented in Appendix A.

4 Analysis and Results

4.1 Measurement and validation of constructs

Sustainability-oriented innovation practices. The scales for measuring sustainability-oriented innovation practices were subjected into validity and reliability tests. The construct validity was assessed merely using exploratory factor analysis (EFA) based on oblique rotation (Direct Oblimin). The scale reliability was tested by calculating its Cronbach's alpha. Additionally, we performed corrected item-total correlations (CITCs) in order to strengthen validity and reliability results. The results of the validity and reliability test are presented in Table 2. The result of factor analysis supports the validity of the two sub-constructs as indicated by the amount of variance explained which exceeded 50%, and the loading factors of all items within each scale exceeded 0.5 (Hair et al., 2010).

Table 2. Scale validity and reliability

Factor	Items	Factor loading	CITC
SOPPD	We consider sustainability as an opportunity for product/service differentiation	.974	.733
	Multiple departments (such as marketing, manufacturing, and purchasing) are working together on sustainability related initiatives	.761	.610
	The organization undertakes regularly business process reengineering with a focus on green perspectives	.753	.776
	The organization makes improvements to radically reduce environmental impacts of products and services' life-cycles	.714	.773
	Preliminary market assessments are made to obtain customers' view of green product ideas	.655	.626
	We search for external sources (e.g. partners, customers, research institutions) of knowledge in our search for innovative ideas related to sustainability	.643	.668
	*The organization is characterised by a learning culture stimulating innovation for sustainability	.532	.749
	*The business processes are flexible allowing us to achieve high levels of responsiveness towards key stakeholder needs and demands	.503	.374
	*The organization involves key non-market stakeholders issues (such as local communities, general public, governments and NGOs) early in the product/service design and development stage	.386	.473
	SOICD	We develop new competencies supporting innovation in the organization	-.931
We continuously try to strengthen innovation skills in key areas where we have no prior experiences		-.851	.755
The organization is constantly exploring new/different ways to understand the expectations and requirements of key stakeholders		-.814	.667
We acquire innovative environmental-friendly technologies and processes		-.656	.644
*The organization involves key market stakeholders (customers, suppliers) early in the product/service design and development stage		-.484	.496

*Excluded from further analysis

SOPPD - sustainability-oriented process and product deployment

SOICD - sustainability-oriented innovation competencies deployment

As shown in Table 2, the results show two factors with eigenvalues greater than one, accounting for 58.168 % of the variance (K-M-O statistic 0.891; Bartlett statistic 898.029; significance 0.000). Thus, a model with two factors may be adequate to represent the data. To ensure a convergent validity a cut-off value of 0.6 and above is considered in this study. The first factor shows the variables having a common underlying dimension of 'sustainability-oriented process and product deployment (SOPPD)'. The main variables, which load heavily on this factor, are related to the eco-innovation activities in product development process as well in relation to innovative sustainability solutions in business processes. The second factor, named 'sustainability-oriented innovation competencies deployment (SOICD)',

includes the variables related to developing new knowledge and skills aiming to foster sustainability-related innovations.

The alpha coefficients have the acceptable value ranging from 0.85 to 0.89, with the lowest value for the variable SOICD and the highest value for the variable SOPPD. Therefore, the alpha value for each construct was well above the recommended value of 0.70, which is considered satisfactory for exploratory research (Hair et al., 2010). As shown in Table 2, the corrected item-total correlation scores range from 0.37 to 0.78. The rules of thumb suggest that the item-to-total correlations should exceed 0.5 (Hair et al., 2010). Accordingly, some items are considered to be excluded from further analysis (in table marked with an »*«).

Organizational performance. Organizational performance measures were assessed via responses to the question ‘Please select the number (on a 5-point Likert-type scale) that accurately reflects the extent of your organization’s overall performance over the last three years on each of the following’. The following dimensions of organizational performance were included in the questionnaire: financial and market performance, quality performance, innovation performance, environmental performance and social performance.

In order to confirm the latent factor structure for measured variables, an exploratory factor analysis (EFA) was performed using the principal components analysis (PCA) with the Varimax rotation method. The results show five factors with eigenvalues greater than one, accounting for 69.961% of the variance (K-M-O statistic 0.869; Bartlett statistic 1497.571; significance 0.000). In order to guarantee the convergent and discriminant validity, the low loading items (< 0.6) were excluded from the subsequent data analysis. Factor loading of organizational performance items are presented in Appendix A.

4.2 Descriptive statistics

Prior to further statistical analysis, we first investigated the descriptive statistics for study variables. Means, standard deviations, and bivariate correlations are presented in Table 3. Observing the overall sub-constructs, we can see that the highest mean value corresponds to the SOICD (3.94), while the lowest value corresponds to the financial and market performance (3.21). However, respondents’ organizations appeared to be implementing sustainability-oriented innovation practices to a relatively strong extent (means of 3.89 and 3.94, respectively).

As expected, the results indicated positive relationships between sustainability-oriented innovation practices and all organizational performance dimensions, with correlations ranging from 0.32 to 0.56 ($p < 0.01$). Furthermore, SOPPD shows the strongest correlation with the overall organizational performance ($r = 0.543$, $p < .001$), and the lowest correlation with the financial and market performance ($r = 0.315$, $p < .001$). Regarding the SOICD, the strongest correlation was observed in the case of overall organizational performance ($r = 0.543$, $p < .001$), while the lowest value was found in the correlation between SOICD and environmental performance ($r = 0.333$, $p < .001$).

4.3 Regression analysis

First, mean scores were calculated from the scale’s items to generate the composite scores for the organizational performance. This newly created composite variable was subsequently used in the regression analysis. Furthermore, the normality of the composite score was checked and the result indicated no major violation, with skewness and kurtosis values well within the accepted range (± 1 and < 3 , respectively). Additionally, the Kolmogorov-Smirnov test of normality supports the aforementioned arguments (K-S = 0.057, $p = 0.200$).

Table 4 summarises the regression results for the effects of sustainability-oriented innovation practices on the organizational performance.

The results in Table 4 show that the overall regression model is significant with an F value of 33.047 ($P = 0.000$). Furthermore, to examine multi-collinearity, we calculated variance inflation factors (VIF) for the regression equation. The VIF for the Model † was 1.62, which is well below the rule-of-thumb cut-off of 10 (Field, 2005).

Table 3. Means, standard deviations and correlations

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) SOPPD	3.89	.76							
(2) SOICD	3.94	.75	.617**						
(3) Organizational performance	3.48	.66	.543**	.561**					
(4) Financial and market performance	3.21	.91	.315**	.361**	.829**				
(5) Quality performance	3.81	.68	.335**	.459**	.708**	.526**			
(6) Innovation performance	3.48	.96	.472**	.510**	.847**	.686**	.504**		
(7) Environmental performance	3.54	.82	.494**	.333**	.709**	.464**	.347**	.493**	
(8) Social performance	3.33	.86	.479**	.494**	.752**	.478**	.481**	.520**	.424**

** Correlation is significant at the 0.01 level (2-tailed).

Table 4. Results of regression analysis: SOPPD, SOICD, and organizational performance

Dependent: organizational performance	
	Model
SOPPD	0.315**
SOICD	0.364**
R ²	0.375
Adjusted R ²	0.364
F	33.047
P-value of overall model	0.000

** $P < 0.01$

As shown in Table 4, the results of the regression analysis suggest that both sub-constructs of sustainability-oriented innovation practices have a significant relationship with organizational performance ($\beta = 0.315$, $p < 0.01$; $\beta = 0.364$, $p < 0.01$ respectively). R square shows that 38% of the variation in organizational performance is explained by the sustainability-oriented innovation practices. Thus, the basic premise which suggests a positive relationship between sustainability practices and organizational performance is supported.

5 Discussion and conclusions

Debates relating to corporate sustainability are becoming important subjects of the wide range of management literature in this century (Asif et al., 2011). Organizations are confronted with environmental and social issues in their decisions, not only to take into account moral and legal responsibility that need to be encouraged (Takala and Pallab, 2000), but also to ensure sustainable economic success (Wagner, 2010; Koo et al., 2013). Although researchers have widely discussed the relevant issues of sustainability-oriented innovation (e.g. Wagner, 2008; Klewitz and Hansen, 2013), there is a lack of empirical evidence on the relationship between these activities and overall organizational performance. To fill this existing research gap, this research proposed a novel construct – sustainability-oriented innovation practices - and developed a research framework to further discuss the effect of these practices on the organizational performance.

Furthermore, our study underscores previous assertions that organizations can benefit from pursuing sustainability (e.g. Schaltegger and Wagner, 2006). The results of the regression analysis have confirmed the premise that sustainability practices positively influence the organizational performance. As such, the study provides empirical evidence indicating that organization can benefit by obtaining and deploying sustainability-oriented innovation practices. In particular, the results of this study suggest that organizational learning in terms of developing new sustainability-

oriented innovation competencies can provide superior performance benefits to the organization. Indeed, several prior studies have suggested that organizational learning with regard to innovation can contribute positively to the sustainability (e.g. Lozano, 2011; Siebenhuner and Anold, 2007). In this regard we can argue that developing capabilities and, therefore, acquiring the intangible assets, is essential for future growth and it is needed to successfully integrate and embed the sustainability in every aspect of the organization.

Furthermore, the results of this study indicate that organizations can benefit from integrating sustainability aspects in their products and processes, as reflected by the positive and significant effect of SOPPD on the organizational performance. These findings are somewhat supporting the argument that incorporating sustainability activities in product and process development can provide tools and mechanisms to organizations to enhance their economic benefits without affecting environment and communities (Pujari, 2006; Schrette et al., 2013). Therefore, our study leads us to suggest that organizations should built sustainability aspects into tangible and intangible product/process quality characteristics, through a constant focus on stakeholders' wants and needs, and on the basis of principles of continuous improvement.

5.1. Theoretical contributions and managerial implications

While drawing on earlier work on performance implications of sustainability management activities (e.g. Wagner, 2008), this research contributes to the literature by focusing on the link between sustainability-oriented innovation practices and organizational performance (e.g. Antony and Bhattacharyya, 2010). Seen in this context, the main theoretical contribution of this study is reflected through the proposal of a novel construct – sustainability-oriented innovation practices - and the successful verification of the effect of these practices on the organizational performance. Additionally, this study considered “sustainability-oriented process and product deployment” and “sustainability-oriented innovation competencies deployment” as the two sub-dimensions of the newly developed construct. This is significant because so far there are only a few empirically based studies that investigate sustainability-related innovations and its performance implications. In this regard, this work can contribute to a better understanding of the underlying dimensions of sustainability-oriented innovation and its relationship with the overall organizational performance. The developed research framework and empirical evidence from this study can provide useful reference for further studies to investigate the relevant literature regarding corporate sustainability, innovation, and performance.

In addition, our results also have significant managerial implications. First, organization's competitive advantage can be achieved by focusing on its environment, includ-

ing its customers' needs and other stakeholders' demands as well as by interacting with potential partners. Among others, this also requires from organization to change the view of the customer from a passive participant to an active contributor in product development (Witell et al., 2011). Therefore, managers should encourage employees to understand stakeholders' present and future needs as well as to pursue knowledge that is outside the scope of their organization. Considering the intra-organizational creation of new knowledge, managers should take into account cross-functional integration in order to enable employees to share existing knowledge and develop new sustainability-oriented innovation competencies.

Second, the capability of an organization to create innovative and sustainable solutions (i.e. process innovations, product innovations and service innovations) can be viewed as organizational resource. Therefore, managers should establish an efficient mechanism to sustain this asset and effectively use it to enhance performance and gain competitive advantages. Accordingly, managers should strive to achieve sustainable innovation excellence in terms of developing innovative new products or services in a way which both in the short term and in the long run satisfies the customers and other stakeholders, such as employees, suppliers and society, in a balanced way (Dahlgard-Park and Dahlgard, 2010).

5.2. Limitations and future studies

As with all empirical studies, there are a number of limitations and directions for future research. First, the scales that were used to measure the construct 'sustainability-oriented innovation practices' capture only limited dimensions of innovation-related themes. Future research needs to examine the usefulness of additional measures. Secondly, due to a relatively small sample size, care should be taken while generalizing the results. Future research on sustainability-oriented innovation could also be more specific in estimating the relative contribution of each of the sub-constructs to the particular dimension of organizational performance (e.g. comparison of the effects of SOPPD and SOICD on the financial and market performance). Therefore, the results of this study can stimulate further development of theory building and conceptual development within the interdisciplinary field of corporate sustainability, quality management, innovation, and performance.

References

- Antony, J.P. & Bhattacharyya, S. (2010). Measuring organizational performance and organizational excellence of SMEs – Part 1: a conceptual framework. *Measuring Business Excellence*, 14(2), 3-11, <http://dx.doi.org/10.1108/13683041011047812>
- Asif, M., Searcy, C., Garvare, R. & Ahmad, N. (2011). Including sustainability in business excellence models. *Total Quality Management & Business Excellence*, 22(7), 773–786, <http://dx.doi.org/10.1080/14783363.2011.585784>
- Ayuso, S., Rodríguez, M.Á. & Ricartm, J.E. (2006). Responsible competitiveness at the “micro” level of the firm. Using stakeholder dialogue as a source for new ideas: a dynamic capability underlying sustainable innovation. *Corporate Governance*, 6(4), 475-490, <http://dx.doi.org/10.1108/14720700610689586>
- Baird, K., Hu, K.J. & Reeve, R. (2011). The relationships between organizational culture, total quality management practices and operational performance. *International Journal of Operations & Production Management*, 31(7), 789-814. <http://dx.doi.org/10.1108/01443571111144850>
- Boons, F., Montalvo, C., Quist, J. & Wagner, M. (2013). Sustainable innovation, business models and economic performance: an overview. *Journal of Cleaner Production*, 45, 1-8, <http://dx.doi.org/10.1016/j.jclepro.2012.08.013>
- Carrillo-Hermosilla, J., Río, P. & Könnölä, T. (2010). Diversity of eco-innovations: Reflections from selected case studies. *Journal of Cleaner Production*, 18, 1073-1083, <http://dx.doi.org/10.1016/j.jclepro.2010.02.014>
- Chenhall, R.H. & Langfield-Smith, K. (2007). Multiple Perspectives of Performance Measures. *European Management Journal*, 25(4), 266–282, <http://dx.doi.org/10.1016/j.emj.2007.06.001>
- Côté, R., Booth, A. & Louis, B. (2006). Eco-efficiency and SMEs in Nova Scotia, Canada. *Journal of Cleaner Production*, 14, 542-55, <http://dx.doi.org/10.1016/j.jclepro.2005.07.004>
- Collins, E., Roper, J. & Lawrence, S. (2010). Sustainability Practices: Trends in New Zealand Businesses. *Business Strategy and the Environment*, 19, 479–494, <http://dx.doi.org/10.1002/bse.653>
- Dahlgard-Park, S.M. & Dahlgard, J.J. (2010). Organizational learnability and Innovability: A system for assessing, diagnosing and Improving Innovations. *International Journal of Quality and Service Sciences*, 2(2), 153-174. <http://dx.doi.org/10.1108/17566691011057339>
- Delai, I. & Takahashi, S. (2013). Corporate sustainability in emerging markets: insights from the practices reported by the Brazilian retailers. *Journal of Cleaner Production*, 47, 211-221, <http://dx.doi.org/10.1016/j.jclepro.2012.12.029>
- Dyllick, T. & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 30–141, <http://dx.doi.org/10.1002/bse.323>
- Fairfield, K.D., Harmon, J. & Behson, S.J. (2011). Influences on the organizational implementation of sustainability: an integrative model. *Organization Management Journal*, 8, 4–2, <http://dx.doi.org/10.1057/omj.2011.3>
- Fauzi, H, Svensson, G. & Rahman, A.A. (2010). “Triple Bottom Line” as “Sustainable Corporate Performance”: A Proposition for the Future. *Sustainability*, 2, 1345-1360, <http://dx.doi.org/10.3390/su2051345>
- Field, A. (2005). *Discovering Statistics Using SPSS* (Introducing Statistical Methods series). London: Sage Publications Ltd; Second Edition.
- Fuentes-Fuentes, M.M., Albacete-Sáez, C.A. & Lloréns-Montes, F.J. (2004). The impact of environmental characteristics on TQM principles and organizational performance. *Omega*, 32, 425–442, <http://dx.doi.org/10.1016/j.omega.2004.02.005>
- Gomes, C.F., Yasin, M.M. & Lisboa, J.V. (2011). Performance measurement practices in manufacturing firms revisited.

- International Journal of Operations & Production Management*, 31(1), 5-30, <http://dx.doi.org/10.1108/01443571111098726>
- Hahn, T. & Scheermesser, M. (2006). Approaches to Corporate Sustainability among German Companies. *Corporate Social Responsibility and Environmental Management*, 13, 150–165, <http://dx.doi.org/10.1002/csr.100>
- Hair, J.F.Jr., Black, W.C., Babin, B.J. & Anderson, R.E. (2010). *Multivariate Data Analysis*, 7th ed. London: Pearson Prentice Hall.
- Hallstedt, S.I., Thompson, A.W. & Lindahl, P. (2013). Key elements for implementing a strategic sustainability perspective in the product innovation process. *Journal of Cleaner Production*, 51, 277–288, <http://dx.doi.org/10.1016/j.jclepro.2013.01.043>
- Hart, S.L. & Milstein, M.B. (2003). Creating sustainable value. *Academy of Management Executive*, 17(2), 56–69, <http://www.jstor.org/stable/4165956>
- Hockerts, K., Morsing, M., Eder-Hansen, J., Krull, P., Midttun, A., Halme, M., Sweet, S., Davidsson, P., Sigurjonsson, T. O., & Nurmi, P. (2008). CSR-Driven Innovation: Towards the Social Purpose Business. Frederiksberg: Center for Corporate Social Responsibility, CBS. Retrieved from: http://samfundsansvar.dk/file/318859/csr_driven_innovation_towards_social_purpose_business_september_2008..pdf
- Hutchins, J. & Sutherland, J.W. (2008). An exploration of measures of social sustainability and their application to supply chain decisions. *Journal of Cleaner Production*, 16, 1688–1698, <http://dx.doi.org/10.1016/j.jclepro.2008.06.001>
- Kaplan, R.S. & Norton, D.P. (1996). *The Balanced Scorecard: Translating Strategy into Action*. Boston: Harvard Business School.
- Kaplan, R.S. (1983). Measuring manufacturing performance: a new challenge for managerial accounting research. *Accounting Review*, 58(4), 686–703, <http://www.jstor.org/stable/247063>
- Kaynak, H. (2003). The relationship between total quality management practices and their effects on firm performance. *Journal of Operations Management*, 21, 405–435, [http://dx.doi.org/10.1016/S0272-6963\(03\)00004-4](http://dx.doi.org/10.1016/S0272-6963(03)00004-4)
- Klewitz, J. & Hansen, E.G. (2013). Sustainability-oriented innovation of SMEs: a systematic review. *Journal of Cleaner Production*, <http://dx.doi.org/10.1016/j.jclepro.2013.07.017>
- Koo, C., Chung, N. & Ryoo, S.Y. (2013). How does ecological responsibility affect manufacturing firms' environmental and economic performance? *Total Quality Management & Business Excellence*, <http://dx.doi.org/10.1080/14783363.2013.835615>
- Lingteringen, E. & Zadek, S. (2005). The Future of Corporate Responsibility Codes, Standards and Frameworks. Executive Briefing. GRI and AccountAbility, 4.
- Lin, C.Y. & Kuo, T.H. (2007). The mediate effect of learning and knowledge on organizational performance. *Industrial Management & Data Systems*, 107(7), 1066–1083, <http://dx.doi.org/10.1108/02635570710816748>
- Lozano, R. (2011). Creativity and Organizational Learning as Means to Foster Sustainability. *Sustainable Development*, <http://dx.doi.org/10.1002/sd.540>
- Maletic, M., Maletic, D. & Gomisecek, B. (2011). Can sustainable quality management contribute to the organizational performance? *African Journal of Business Management*, 5(9), 3723–3734, <http://dx.doi.org/10.5897/AJBM10.1575>
- Martensen, A., Dahlggaard, J.J., Park-Dahlggaard, S.M. & Grønholdt, L. (2007). Measuring and diagnosing innovation excellence – simple contra advanced approaches: a Danish study. *Measuring Business Excellence*, 11(4), 51–65, <http://dx.doi.org/10.1108/13683040710837928>
- Maas, S. & Reniers, G. (2013). Development of a CSR model for practice: Connecting five inherent areas of sustainable business. *Journal of Cleaner Production*, <http://dx.doi.org/10.1016/j.jclepro.2013.07.039>
- Neely, A. & Adams, C. (2000). *Perspectives on performance: the performance prism*. In Bourne, M. (Ed.), *Handbook of Performance Measurement*, Gee Publishing, London.
- Otley, D. (1999). Performance management: A framework for management control systems research. *Management Accounting Research*, 10 (4), 363–382, <http://dx.doi.org/10.1006/mare.1999.0115>
- Pokinska, B., Dahlggaard, J.J. & Eklund, J.A.E. (2003). Implementing ISO 14000 in Sweden: motives, benefits and comparisons with ISO 9000. *International Journal of Quality & Reliability Management*, 20(5), 585–606, <http://dx.doi.org/10.1108/02656710310476543>
- Prajogo, D.I. & Sohal, A.S. (2003). The relationship between TQM practices, quality performance, and innovation performance An empirical examination. *International Journal of Quality & Reliability Management*, 20(8), 901–918, <http://dx.doi.org/10.1108/02656710310493625>
- Pujari, D. (2006). Eco-innovation and new product development: understanding the influences on market performance. *Technovation*, 26, 76–85, <http://dx.doi.org/10.1016/j.technovation.2004.07.006>
- Rennings, K., Ziegler, A., Ankele, K. & Hoffmann, E. (2006). The influence of different characteristics of the EU environmental management and auditing scheme on technical environmental innovations and economic performance. *Ecological Economics*, 57, 45–59, <http://dx.doi.org/10.1016/j.ecolecon.2005.03.013>
- Rocha, M., Searcy, C. & Karapetrovic, S. (2007). Integrating Sustainable Development into Existing Management Systems. *Total Quality Management & Business Excellence*, 18(1–2), 83–92, <http://dx.doi.org/10.1080=14783360601051594>
- Salzmann, O., Ionescu-Somers, A. & Steger, U. (2005). The Business Case for Corporate Sustainability: Literature Review and Research Options. *European Management Journal*, 23(1), 27–36, <http://dx.doi.org/10.1016/j.emj.2004.12.007>
- Schaltegger, S. & Wagner, M. (2006). Managing and measuring the business case for sustainability: Capturing the relationship between sustainability performance, business competitiveness and economic performance. In S. Schaltegger & M. Wagner, (eds) *Managing the business case for sustainability: The integration of social, environmental and economic performance*, pp. 1–27. Sheffield: Greenleaf.
- Schrettle, S., Hinz, A., Scherrer –Rathje, M. & Friedli, T. (2013). Turning sustainability into action: Explaining firms' sustainability efforts and their impact on firm performance. *International Journal of Production Economics*, 147, 73–84, <http://dx.doi.org/10.1016/j.ijpe.2013.02.030>
- Seuring, S. & Gold, S. (2013). Sustainability management beyond corporate boundaries: from stakeholders to performance. *Journal of Cleaner Production*, 56, 1–6, <http://dx.doi.org/10.1016/j.jclepro.2012.11.033>
- Siebenhuner, B. & Anold, M. (2007). Organizational learning to manage sustainable Development. *Business Strategy and the Environment*, 16, 339–353, <http://dx.doi.org/10.1002/bse.579>

- Takala, T. & Pallab, P. (2000). Individual, Collective and Social Responsibility of the Firm. *Business Ethics: A European Review*, 9(2), 109–118, <http://dx.doi.org/10.1111/1467-8608.0018>
- Tangen, S. (2003). An overview of frequently used performance measures. *Work Study*, 52(7): 347–54, <http://dx.doi.org/10.1108/00438020310502651>
- van Kleef, J.A.G. & Roome, N.J. (2007). Developing capabilities and competence for sustainable business management as innovation: a research agenda. *Journal of Cleaner Production*, 15, 38–51, <http://dx.doi.org/10.1016/j.jclepro.2005.06.002>
- Veleva, V. & Ellenbecker, M. (2001). Indicators of sustainable production: framework and methodology. *Journal of Cleaner Production*, 9, 519–549, [http://dx.doi.org/10.1016/S0959-6526\(01\)00010-5](http://dx.doi.org/10.1016/S0959-6526(01)00010-5)
- Venkatraman, N. & Ramanujam, V. (1986). Measurement of business performance in strategy research: a comparison of approaches. *Academy of Management Review*, 11(4), 801–14, <http://www.jstor.org/stable/258398>
- Weber, M. (2008). The business case for corporate social responsibility: A company-level measurement approach for CSR. *European Management Journal*, 26, 247–261. <http://dx.doi.org/10.1016/j.emj.2008.01.006>
- Wagner, M. (2010). The role of corporate sustainability performance for economic performance: A firm-level analysis of moderation effects. *Ecological Economics*, 69, 1553–1560, <http://dx.doi.org/10.1016/j.ecolecon.2010.02.017>
- Wagner, M. (2008). Links between sustainability-related innovation and sustainability management. SFB 649 Discussion Paper 2008-046. Berlin: Technische Universität München. Retrieved, April 13 from <http://sfb649.wiwi.hu-berlin.de/papers/pdf/SFB649DP2008-046.pdf>
- Witell, L., Löfgren, M. & Gustafsson, A. (2011). Identifying ideas of attractive quality in the innovation process. *The TQM Journal*, 23(1), 87–99, <http://dx.doi.org/10.1108/17542731111097515>

Matjaž Maletič is a teaching assistant at Faculty of Organizational Sciences, University of Maribor. His main research interest concerns the quality management, corporate sustainability, integration of quality management and sustainability as well as the overall organizational performance. He holds a bachelor's degree in Wood Science and Technology (University of Ljubljana) and Organization (University of Maribor). He has defended his PhD thesis in September 2013 at the University of Maribor, Faculty of Organizational Sciences.

Damjan Maletič is teaching assistant and researcher at the Faculty of Organizational Sciences, University of Maribor. His

research activities are mainly devoted to the fields of maintenance management and quality management. At present, his research is focused on studying the interaction between quality management, production and maintenance performance. He holds a bachelor's degree in Wood Science and Technology (University of Ljubljana) and Organization (University of Maribor). He is currently a PhD student at the University of Maribor, Faculty of Organizational Sciences.

Jens J. Dahlgaard is Professor Emeritus and previously chair professor at the Division of Quality Technology and Management at Linköping University, Sweden, and before that he was chair professor at Department of Quality Management at the Aarhus School of Business, Denmark where he build up the first master program in Quality Management in Europe. During this period he was also active as one of the founders of The Danish Quality Award and also one of the founders of EUN.TQM (European University Network in TQM). He has received several awards and has been invited as distinguished visiting professor at many European and Asian universities. He is a member of the International Academy for Quality (IAQ), he is also elected as the first president of EAQS (European Academy for Quality Sciences). He has published 15 books and over 100 research articles. He serves on the editorial boards of several international journals and is currently editor of the journal Total Quality Management & Business Excellence (TQM&BE). Professor Dahlgaard is one of the founders and chairman of the yearly QMOD conferences (Quality Management and Organisational Development) – one of the world's largest research conferences on Quality and Service Sciences.

Su Mi Dahlgaard-Park is currently professor at Institute of Service Management, Lunds University, Sweden. Her research areas have been HRM, Quality Management, Organization Theory, Learning and Knowledge Management, and Organizational Change. Within these areas she has published more than 100 research papers and numerous books. She is elected as academician of IAQ (International Academy for Quality) and co-founder and co-chair of the International QMOD/ICQSS (Quality Management and Organizational Development) Conference during the last 13 years. She is a frequent keynote speaker at International conferences and has been invited as distinguished visiting professor in many European and Asian universities.

Boštjan Gomišček is associate professor at the University of Maribor, Faculty of Organizational Sciences, Slovenia. As head of the Laboratory for Quality Management he is predominantly engaged in the following research fields: quality management, maintenance management and environmental protection.

Povezanost med inovativno usmerjenimi dejavnostmi trajnostnega razvoja ter učinkovitostjo in uspešnostjo organizacije: empirični dokazi iz slovenskih organizacij

Ozadje in namen – Poglavitni namen članka je predstaviti empirično raziskavo o vplivu dejavnosti trajnostnega razvoja, ki so osredotočene na inovativnost, na celokupno učinkovitost in uspešnost organizacije. Namen članka je prav tako izboljšati razumevanje operacionalizacije spremenljivk dejavnosti trajnostnega razvoja, s poudarkom na dimenzijah inovativnosti.

Zasnova in metodologija – Pričujoči članek temelji na anketni raziskavi, na osnovi katere smo pridobili 116 uporabnih odgovorov s strani slovenskih proizvodnih in storitvenih organizacij. S pomočjo faktorske analize smo preverili kon-

vergentno veljavnost merjenega konstrukta in s tem oblikovali posamezne dimenzije na inventivnost osredotočenih dejavnosti trajnostnega razvoja organizacije. Vplive na inventivnost osredotočenih dejavnosti trajnostnega razvoja na celokupno učinkovitost in uspešnost organizacije smo proučevali s pomočjo regresijske analize.

Rezultati – Rezultati raziskave so pokazali, da na inventivnost osredotočene dejavnosti trajnostnega razvoja pozitivno in statistično značilno vplivajo na celokupno učinkovitost in uspešnost organizacije. Rezultati raziskave so torej potrdili predpostavko, da razvoj kompetenc na področju inovativnosti in vključitev le-teh v procese organizacije, prinese številne koristi za organizacijo. Na ta način članek prispeva k razpravi o priložnostih in možnostih organizacije, da razvija konkurenčne prednosti in hkrati prispeva k trajnostnemu razvoju.

Zaključek – Raziskava doprinaša pomembne teoretične in praktične vpogleda na področju trajnostnega razvoja organizacije in prikazuje pomembnost izvajanja na inventivnost osredotočenih dejavnosti trajnostnega razvoja z vidika doseganja učinkovitosti in uspešnosti organizacije. Izsledki raziskave poudarjajo vlogo vodstva, ki mora spodbujati povečevanje sposobnosti organizacije na področju inovativnosti, saj organizacije lahko posledično izboljšujejo različne segmente učinkovitosti in uspešnosti ter hkrati dosegajo cilje trajnostnega razvoja.

Ključne besede: trajnostni razvoj organizacije, trajnostno usmerjene inovacije, učinkovitost in uspešnost organizacije, empirična raziskava

Appendix A

Measurement items – organizational performance

Financial and market performance	Factor loadings
*PERF1. Return on investment (ROI) has increased above industry average during the last 3 years	0.587
PERF2. Sales growth has increased above industry average during the last 3 years	0.833
PERF3. Profit growth rate has increased above industry average during the last 3 years	0.799
PERF4. Market share has increased during the last 3 years	0.750
<i>Quality performance</i>	
*PERF5. The quality of our products and services has been improved during the last 3 years	0.516
PERF6. Customer satisfaction has increased during the last 3 years	0.634
PERF7. Customer complaints has decreased during the last 3 years	0.859
PERF8. The cost of poor quality has decreased during the last 3 years	0.785
<i>Innovation performance</i>	
PERF9. The organization has introduced more innovative products and services than our main competitors during the last 3 years	0.730
PERF10. Our new products and services are perceived by our customers as innovative	0.714
PERF11. The speed of adoption of new technology is faster than at our main competitors	0.690
*PERF 12. The number of innovations that provide the organization with a sustainable competitive advantage has increased during the last 3 years	0.570
<i>Environmental performance</i>	
PERF13. The efficiency of the consumption of raw materials has improved during the last 3 years	0.717
PERF14. The resource consumption (thermal energy, electricity, water) has decreased (e.g. per unit of income, per unit of production, ...) during the last 3 years	0.758
PERF15. The percentage of recycled materials has increased during the last 3 years	0.768
PERF16. The waste ratio (e.g. kg per unit of product, kg per employee per year) has decreased during the last 3 years	0.696
<i>Social performance</i>	
PERF17. The turnover ratio has decreased during the last 3 years	0.706
PERF18. The employees' satisfaction has increased during the last 3 years	0.795
PERF19. The employees' motivation has increased during the last 3 years	0.760
*PERF 20. Health and safety performance has improved during the last 3 years	0.665
*PERF 21. Employee education and training (man-days per employee per year) have increased during the last 3 years	0.539

*Excluded from further analysis

DOI: 10.2478/orga-2014-0002

Impacts of the Implementation of a Project Management Information System – a Case Study of a Small R&D Company

Mirjana Kljajić Borštnar, Andreja Pucihar

University of Maribor, Faculty of Organizational Science, Kidričeva cesta 55a, Slovenija,
mirjana.kljajic@fov.uni-mb.si. andreja.pucihar@fov.uni-mb.si

Background: The problems of resources management (human, financial, time) in multi-project companies are inherently complex and need to be addressed systematically, in both small and large organizations. Furthermore, there is a need for transparent communication and collaboration within the organization as well as with partnering organizations. There are many methodologies and tools supporting project management, which are themselves complex and are therefore not widely adopted, especially among small companies.

Objectives: The aim of this paper is to analyse impact of the implementation of a flexible cloud-based project management information system (PMIS) from the human resources, financial management, and collaboration points of view.

Method: We have conducted a case study in a small Slovenian research and development company, that has implemented the 4PM PMIS.

Results: The findings imply the importance of keeping the balance of the creative processes that are unstructured, rule free and even chaotic, with structured processes monitor and control.

Conclusions: The results of the study suggest that the use of “4PM” in support of multi-project management improves human resources and financial management in a collaborative and transparent way when implemented in an open and highly motivated environment.

Keywords: multi-project management, project management information system, systems approach, small organization

1 Introduction

Contemporary organizations are increasingly project oriented. Gareis and Huemann (2003) refer to such organizations as Project-oriented Companies (POC), which acknowledge project management as an organizational strategy, manage a project portfolio of different project types and are organized to provide integrative functions. Furthermore, the projects represent their core business. Projects are interrelated within the organization through human resources, finances, and time planning. In contrast, people are assigned to other activities and tasks, which also consume their time (and other resources) and which are not accounted for within

the specific project. If not properly governed, such organizations end up with weak organizational climates, high fluctuation rates, as well as low productivity and efficiency.

In previous decades, research on project management was primarily focused on single-project management (Ali and Money, 2005; Ali, Anbari and Money, 2008; Raymond and Bergeron, 2008; Lindkvist, Söderlund and Tell, 1998; Lundin and Söderholm, 1995; Shenhar and Dvir, 1996). There is a substantial body of knowledge on the methodologies and tools used to support project management, from its traditional form to more agile ones (Kerzner, 2003; PMI, 2001). Recently, the focus has shifted towards multi-project management (Van der Merwe, 1997; Packendorff, 1995; Nandhakumar and Jones, 2001; Engwall and Jerbrant,

2003; Cusumano and Nobeoka, 1998; Elonen and Arto, 2003; Zika-Viktorsson, Sundström and Engwall, 2006; Mortensen, Woolley and O'Leary, 2007). However, many of those studies are addressing an *a priori* portfolio composition, which only addresses the priorities set to the single projects and resources on a strategic level (also referred to as 'project portfolio management' and 'program management'). However, the term 'multi-project management' refers to the simultaneous managing of several projects on the operational level with the aim of the successful functioning of a single project and overall organizational success, which represents an overwhelming burden on the project and especially general managers.

Evaristo and Fenema (1999) proposed a new categorization from the number of projects and locations, i.e. a new model identifying complex multi-projects on multiple locations that can be either distributed or shared.

The problems of resource allocation (human, financial, time) in organizations with multiple concurrent projects are inherently complex. Engwall and Jerbrant (2003) studied resource allocation and suggested that there is a need to address this issue as a deeper organizational feature embedded in a multi-project organizational setting. Gherardi (2007) addressed complexity in multi-project organizations as an ability of these companies to deal with the coexistence of order and chaos. She proposed four organizational archetypes: the creative-reflective, the mechanic-structured, the chaotification of order, and the bureaucratization of chaos. This means that multi-project organization has specific needs in terms of supporting creative work process while keeping the structured processes. Resource allocation is not the only challenge in the multi-project environment. Turner, Ledwith and Kelly (2012) addressed the problem of the multi-tasking and multi-disciplinarity of the project teams' members. Ratcheva (2009, pp. 207) argues that multi-disciplinarity can '[...] facilitate team members in articulating diverse knowledge perspectives'. A different view was researched by Mortensen et al. (2007), who discussed multiple team memberships. Where the classic project management approach assumes one person assigned to one project, modern practices assume one person assigned to a number of projects. Their study implies that the crucial role for team success is the selection of appropriate team members, information sharing and communication within and across teams and in the organization of work. When team members are working across time, space and organizational boundaries and their work is supported by information and communication technology, the phrase 'virtual teams' is used (Lipnack, 2000, pp. 352).

Different geographical locations of the team members account for differences in physical location, time zones, cultures and values (Lee-Kelley and Sankey, 2008; Groznik, Weber and Kern, 2011). The human resources allocation problems regarding perspectives on multi-disciplinarity, multi-team membership, and virtual teams were discussed

in (Evaristo and Fenema, 1999; Payne and Turner, 1999; Hendriks, Voeten and Kroep, 1999), in which the authors suggested different approaches to gaining control and reducing risk of insufficient human resources management. In contrast, the results of a study by Zika-Viktorsson, Sundström and Engwall (2006, pp. 391) suggested that the problem of human resources allocation is far more complex and cannot be solved in a prescriptive way. Furthermore, Zika-Viktorsson, Sundström and Engwall, (2006, pp. 391) identified that project overload arising from insufficient human resources allocation '[...] is associated with impaired performance (measured in terms of poor adherence to time schedules), high levels of psychological stress reactions, and decreased competence development'.

Owing to the above-explained complexities of human resources management (competencies and time allocation), financial management (financial resources allocation), and quality management, several authors have suggested a need for efficient information and communication support (Ahleman and Riempp, 2008; Kaiser and Ahlemann, 2010; Caniëls, Ralph and Bakens, 2012; Mortensen et al., 2007).

The basic presumption in the management of complex dynamic systems is that the system can be observed and controlled by feedback information (Kljajić Borštnar, Kljajić, Škraba, Kofjač and Rajkovič, 2011). Furthermore, not only feedback, but also anticipative information is necessary for the efficient management of a complex system. The information system (IS) plays the most important role in all living and technical systems. It provides communication among elements and environments in the course of achieving goals. Without feedback and anticipative information, the functioning and developing of the systems would be impossible. However, depending of the nature of the systems, there are enormous differences among the types and complexities of IS. Therefore, the basic role of information systems must be to provide the right information when needed. Nevertheless, information alone is insufficient for successful decision making. Decision processes in organizational systems are primarily based on the participating subjects.

Nowadays, information systems are mainly computer-based systems. They are a combination of hardware, software, infrastructure and employees, organized to facilitate various tasks and activities in an organization. In a broad sense, a definition of 'information system' is used to refer not only to the information and communication technology (ICT) that an organization uses, but also to the way in which people interact with this technology in support of business processes. Any specific information system aims to support planning, operations, management and decision making (Kroenke, 2008). Information systems cover various areas of organizations; some support only particular functional areas of organizations (e.g. financial, marketing, production, and human resource management information systems), some support entire functional areas of organiza-

tions (e.g. enterprise resource planning systems) and others support the networks of organizations (e.g. supply chain management information systems) (Rainer, Turban, Potter and Cegielski, 2010). Enterprise (wide) resource planning systems (ERP systems), supporting all functional areas and business processes of organization (developed in the late 1980s) (Rashid et al., 2002) have been widely adopted by large and medium-sized organizations (Bernroider, Sudzina and Pucihar, 2011).

Project Management Information Systems (PMIS) are still used partially, mainly single-project-management oriented, lacking holistic support of all business processes of multi-project oriented organizations, and according to Dahlgren and Söderlund (2010) and Raymond and Bergeron (2007, pp. 3) 'the wider and fundamental issues of organization-wide coordination and control between projects need to be addressed'.

Issues of complexity, chaos vs. order and multi-project interdependencies are especially difficult to address in small and medium-sized companies (Turner, Ledwith and Kelly, 2012, Ernø-kjølhede, 2000). Our study will focus on a small and medium-sized research and development (R&D) company in particular. These kinds of organizations rely on acquiring projects and successful execution of projects from various sources of private and public financiers). Furthermore, there is a need for transparent communication and collaboration within the organization as well as with partnering organizations. To be able to successfully manage different projects (in type, funding, scope, scale) while simultaneously keeping people motivated and creative, these challenges need to be addressed systematically. There are many methodologies and tools, (e.g. Traditional Approach, PRINCE2, Critical Chain Project Management, Event-Chain Methodology, Process-Based Management, Agile Project Management, Lean Project Management, etc.) supporting project management, which are themselves complex and are therefore not widely adopted, especially among smaller organizations. Furthermore, the new ways of working require flexibility from organizations and people in the way of planning the work, monitoring and controlling the work, and overcoming various communication and collaboration challenges and cultural differences. So-called virtual teams, acting in various cultural, language, time, and interdisciplinary environments collaborate on various projects (e.g. new product, service, and knowledge development) in a virtual environment, without having even one face-to-face meeting. Another challenge in such projects is in efficient knowledge transfer within the financial and time limits of the given project. The problem of time limitations and overload, affecting the knowledge transfer and hence the individual and organizational development was addressed by Zika-Viktorsson, Sundström and Engwall (2006).

While project managers must provide transparent and efficient planning, monitoring and controlling of resources in order to achieve the project goals, top management must

have an overview of the company as a whole (Martinsuo and Lehtonen, 2006). The use of an integral information system that efficiently supports all aspects of multi-project oriented organization is thus essential.

We have conducted a case study in a small Slovenian research and development company using the 4PM web-based project management information system. The aim of this qualitative study is to analyse the process of implementation and assess the impact of the implementation of a flexible cloud-based project management information system from the human resources, financial management, and collaboration points of view in a small R&D organization.

2 Methodology

2.1 Description of the company

We have conducted a single case study in a small Slovenian research and development (R&D) ICT company. It is a typical, small R&D multi-project company, established in 2003. It has 58 employees, of which 85% are male. The average age of the employees is 32. The employees' educational structure is 10% PhD, 10% MSc, and the remaining having bachelor's degrees. The management structure includes a CEO and managing director at the top and three department directors on the second level of decision-making. The yearly turnover is about €3.15 million. Their main income comes from R&D projects financed by national and EU funding, and commercial software development projects. At the time of the study, they were running five EU projects as a partnering organization, and over 30 commercial software development projects.

Mission statement from the company's CEO:

We try to create a stimulating environment in which high-quality and innovative technology products are being developed. From the outset, we have strived to maintain a democratic organizational structure and a culture built on trust, where everyone adds his part of the puzzle.

The company soon realized that they would need a holistic and systematic approach for managing the large number of projects to support financial planning, human resource planning (task delegation according to competences and time), documentation archiving, monitoring and controlling, and reporting. The company was a typical example of a multi-project organization with clearly identified needs that must be addressed in a systematic way; it was therefore an appropriate case to be studied.

The single-case study was used as a research strategy to examine three main aspects of use of the 4PM project management information system in a multi-project-oriented organization, i.e. human resources, finance planning and collaboration aspects. The research was conducted in four

stages (Yin, 2003): designing, conducting, analysing the evidence, and developing the conclusions, recommendations and implications.

2.2 Design of the study

This study was designed to address both of the possible applications for a case study model (Yin, 2003): firstly, to describe the real-life context in which intervention has occurred and, secondly, to describe the intervention itself.

The real-life context refers to the problems related to the scope and nature of the company's multi-project operations. For the observations and investigation of the current and desired situations, we used soft systems methodologies (SSM), in particular the seven-stage approach (Checkland, 1999):

1. Entering the problem situation,
2. Expressing the problem situation,
3. Formulating root definitions of relevant systems,
4. Building conceptual models of human activity systems,
5. Comparing the models with the real world,

6. Defining changes that are desirable and feasible,
7. Taking action to improve the real world situation.

The intervention refers to the process of implementation of the 4PM PMIS, which is presented in Figure 1: User Requirements, Pilot Use, and Full Implementation. Throughout the process of implementation, the evaluation, based on user feedback, was monitored. The feedback was used to adjust the functionalities of the PMIS and to gain insight into the implementation process from the research point of view. Evidence was gathered by using triangulation data collection methods, done in accordance with the PMIS implementation phases. The following instruments were used (Yin, 2003): direct and participant observations, interviews, and documentation.

In the User Requirements phase, the PMIS functionalities (user groups, classifications, reports and performance measures) were aligned to the organizational goals with the observation of participants, documents analysis and interviews. In the second phase (Pilot Use), the implementation plan was developed. The corporate policy on the use of the

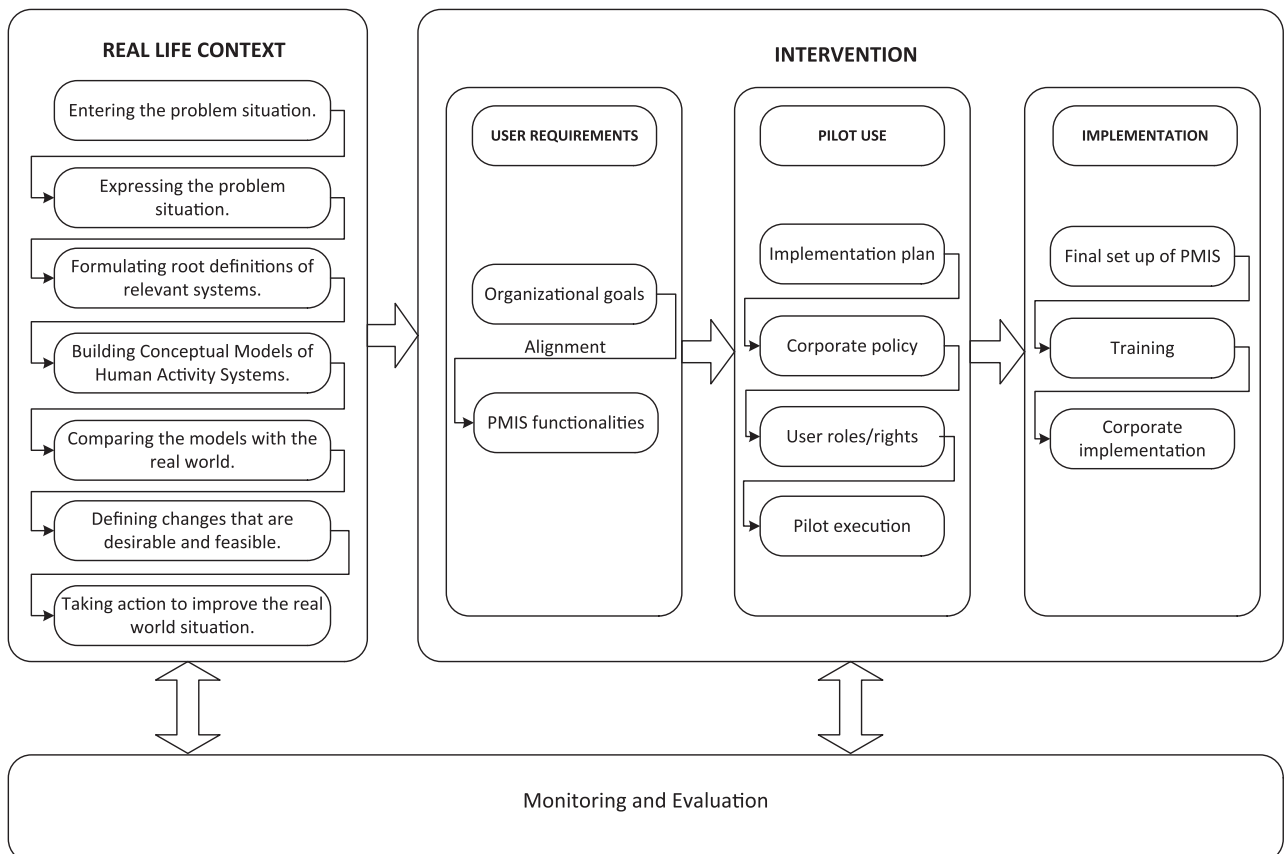


Figure 1: Research design

PMIS was set, and user and access rights were prepared. A smaller scale test use was done with a limited number of participants and projects. The group consisted of one administrator and three researchers, of which one assumed the role of project manager; top management also participated in the test use. Feedback information was collected by observation and interviews with the test users. Adjustments of the PMIS functionalities (taxonomy, access rights and reports) were done based on the feedback from the test users.

In the phase of full implementation, the final setup of 4PM PMIS was installed based on the pilot use. Before the corporate implementation was rolled out, the users received training on the use of PMIS. Feedback information was again collected from the users and several adjustments to the PMIS were made. Finally, the processes and users opinions were analysed via observation and interviews after the 4PM PMIS was in use for six months.

2.3 Conducting the study

The study was conducted within a total time span of one year. During that period, all the phases in Figure 1 were executed. In the study, we examined both the real life context using Checklands' soft system methodology (1999), as well as the intervention, which can be best described as a Project Life Cycle with specific stages defined by the PMIS provider together with the company (see Figure 1). Semi-structured interviews with top management, project managers, researchers and administrative workers were conducted during problem identification, test use, and post implementation. Interviews were designed around three main aspects: employee satisfaction, financial management and collaboration.

Employee satisfaction aspect was examined around the following topics:

- Does the PMIS cover all data and information needs?
- Is the PMIS easily accessible?
- Is the user interface intuitive?
- How long did it take to get used to navigating the PMIS?
- Does it take you less time to complete reporting on work completed?
- General opinion about the use of the 4PM PMIS.

The aspect of financial management was considered through the following topics:

- Does the PMIS cover all data and information needs?
- Is the communication with the accountant more efficient?
- Do you have better overview of individual project finances?
- Do you have better overview of overall organizational finances?

Collaboration aspect in light of the PMIS was examined through the following topics:

- Are you better informed about the projects' undertakings?
- Do you feel better connected to your colleagues?
- Can you better access company's knowledge?
- Do you feel you have better overview of the whole organization?

The interviews were recorded and coded by the interviewees' status (administration, project manager, researcher, top management) and the time of interview (occurring at the beginning of the implementation process, during, and post-implementation).

Beginning of the implementation processes (participants' observation, interviews, document analysis)

In an interview with the top management, we identified key problems, goals and processes that needed to be supported. In a small company, top management is actively involved in the work processes, and they rely on a democratic and open working relations based on transparent communication. However, they expressed the need to support the creative work by structured processes that can be monitored and controlled. Priority was given to the public co-funded projects, with their strict reporting requirements. Furthermore, the need for a gradual implementation of the PMIS was noted. Project managers are in fact researchers, many times lacking specific competencies on project management. Therefore, it was vital to implement the PMIS gradually, so that employees can acquire knowledge and skills for using it. Based on the initial interviews, document analysis and observation, the personalized database taxonomy (classification) was developed, taking into account specific needs of the company, such as internal projects and tasks classifications. In total, ten interviews were conducted in this phase.

During the implementation process (interviews, feedback information, adjustment)

A test user group consisting of the CEO, two researchers, one researcher taking the role of a project manager, and one administrative worker were trained for the use of the 4PM PMIS. An administrative worker took care of the initial data input. First, they started using the financial module, and later the document management system and collaborative environment. The latest stage of this phase was the introduction of the non-project related module related to human resources management (leave planning, absence, travels, appraisals etc.). In total, four interviews were conducted at this phase.

Post Implementation (feedback information, processes analysis, participants' observation, and post implementation interviews)

After the 4PM PMIS was introduced and used for six months across the organization, interviews with the top

management, project managers, researchers, and administration workers were conducted, and the impact of implementation was assessed. In total, nine interviews were conducted at this phase.

3 Findings

The problems described by the participants of the study are common to many SMEs, especially in times of accelerated growth of projects and employees. Current management practice drawn from traditional project management proves to be inadequate. Experts in certain business domains usually lack knowledge of human resources management, financial management, and other competences important for successful project management. The complexity of multi-project organization is reported to be overwhelming and the need for systematic IT support had been identified on the project management and top management levels. Participants clearly identified three key areas that need to be supported by the PMIS:

- Human resources management (work load planning, task delegation, task acceptance, reporting of time spent on a task, evaluation of performance, communication and collaboration);
- Financial management on both single project as well as overall organizational level (revenue planning, inflow planning, costs planning, cash flow planning, cost controlling, reporting); and
- Overall multi-projects management on a strategic level.

Both observation and document analysis supported the findings of the interviews with project managers in which it was stated that they were overloaded by the project administration. This was mostly related to reporting to the management and financiers.

Three groups of users were identified according to their needs for IT support:

- Top management, who must communicate accurate and up-to-date information to the project managers about changes and risks, upon which the project managers would rely for the decision-making about the project. Top management must have an aggregated overview of critical business information (cash flow, performance indicators, etc.);
- Project managers, who must be supported in their everyday project activities (task delegation and control, controlling the financial plan execution, reporting),
- Members of the project team, who need an operating platform supporting the project structured and unstructured communication, and documentation management.

The basic idea of the company management was that every member of the project team should participate in the quest for positive project results, should collaborate

and communicate with all members of the team, providing transparent insight into the state of the project, reporting about the work done, time spent, and other relevant data about the project. Furthermore, the company was looking for a flexible solution that would contribute to learning and thus strengthening the project management (and other) competencies of the managers and team members. The solution should provide efficient decision-making about priorities, based on the systems overview throughout the whole company.

3.1 Human Resources Management

The productivity of employees working on multiple projects concurrently is difficult to assess. The reported time spent on a task and the effective time are frequently not the same. Furthermore, the requirements for reporting to financiers, especially on international projects, do not show the real status of the hours spent on a task.

There are four concepts related to work time: 1) planned time, 2) reported time by an employee, 3) approved time by a project manager, and 4) reported time to the financiers. The PMIS is supporting dynamic work planning according to the overview of the actual time allocated to specific tasks (Kobal, 2009) and reporting about the time spent on a task. Additionally, the agreed effective time and content of work done can help better workload distribution, transparent rewarding of employees, and finally greater employee satisfaction and motivation for work. Therefore, the basic role of the 4PM PMIS was in supporting of the process of dynamic work planning with monitoring and controlling, and transparent rewarding of employees. This process is best described as a democratic process of reporting the subjective judgment of time spent on a specific task, and communication and negotiation about the effective time acknowledged, qualitative and quantitative work assessment, absence planning, work load planning, etc. It was of great importance that the top management was actively participating in promoting the culture of reporting, monitoring and controlling of the time spent on tasks, and the quality assessment of the work done.

Although a flexible solution, it should provide standardized and, where possible, automated handling of the following activities: task delegation, time allocation, automated notification of changes, documentation handling and report preparation. Structured and standardized processes, maintaining flexibility for the task scheduling, are crucial in the efficient support of all participants in the process and allow participants to be focused on goals rather than administration. At the same time, all three groups of users have feedback and anticipative information when needed.

There are two instances of reporting needed: one for management and other for financiers. Well-defined and supported processes offer higher reliability in the preparation of various reports (scheduled reports, ad hoc reports and analy-

sis) based on coherent and reliable data. Furthermore, connectivity to other information systems, such as accounting IS, and human resources management IS, would contribute to better efficiency in planning, monitoring and controlling of not merely the human resources processes, but all business processes. Furthermore, reports on the analysis of the work planned vs. work done in yearly appraisals revealed some interesting information that can help to better manage the human resources. By comparing planned and completed work, management can assess the performance, task and time allocation adequacy, and the aspirations of the employees. Based on the historical data, predictions can be made for workload planning as well.

The need for handling unpredicted situations, that require relocating resources and prioritizing tasks, is supported by the overview of the whole organization provided by PMIS. However, not only the information about the current and predicted workload distribution is sufficient, the task delegation is supported in a collaborative way. Each member has the right to accept or decline the task due to other prioritized tasks. Open communication within and outside the project team is vital, but focused and facilitated discussion is also supported. Together, they contribute to better employee involvement and collaboration, and fewer conflicts. Transparency of processes, based on systematic feedback information at all levels of decision-making (operational–task realization, tactical–goal achievement, and strategic–overall performance success) leads to better motivation of employees, transparent performance assessment of employees, and knowledge transfer between the project members and between projects.

3.2 Financial management

Financial management in a multi-project organization is complex due to limited financial resources, unpredictable costs, different currencies, specific financial reporting requirements of individual financiers, possible large investments before receiving of funds, travelling expenses, etc. The basic challenge is cash flow planning. Usually, the costs occur before the cash inflow; it can happen that large costs occur in several projects during the same time period; therefore, the need for planning the cash flow is crucial for business. Personnel costs represent the largest part of the budget; therefore, it was crucial to connect work planning and reporting (based on different hourly rates related to a specific project) with the accounting IS.

One of the requirements of the organization was to maintain the existing accounting IS (especially with accounts payable and receivable); therefore, integration with the PMIS was needed. Information on cash inflows and outflows should be available when the event occurs; this was explicitly stated by project managers. The project management view of financiers usually differs from the accounting

view; therefore, this communication was improved with the implementation of the PMIS.

Another explicit requirement, indicated from the interviews with the top management, was the need for financial overview across projects in terms of planning, and controlling the cash inflows and outflows. Only in this way can management anticipate risks and critical events and make timely decisions accordingly.

The major challenge in integrating the two information systems was not technological, but organizational. This is also the case in many other similar organizations where employees not directly involved in the project work have difficulties comprehending the nature of such work. Furthermore, the data structure (aggregation level), format and time had to be aligned in order to provide suitable information to the designated person in time.

3.3 Collaboration aspect

Collaboration was one of the three main aspects identified by the top management, project managers, and team members. Along financial and human resources management, collaboration is crucial in the success of the heterogeneous R&D project teams. Teamwork encompasses open, focused and documented communication, and knowledge transfer. Knowledge can be stored in documents, communication (formal, informal, tacit and implicit), and there is always tacit knowledge hidden within the project groups.

For the organization in question, the R&D groups are heterogeneous in existing within and outside the organization, being multidisciplinary (programmers, systems engineers, web programmers, designers, administrative workers, and others), multicultural, and multilingual. The work is frequently located off of the company premises, sometimes team members never meet face to face. For this reason, the collaboration platform should provide support for efficient communication among the team members and structured and transparent communication and document management between project team members.

The participants of the study indicated the need for efficient document management. Integrated with a collaboration platform, this forms a powerful knowledge management tool encompassing the following functionalities:

- Prepared templates and reports (with comments, documents and files and folders structure),
- Learning platform for within and between project knowledge transfer (time plans, various reporting options, standardized contract drafts, technical specifications, minutes of meetings, etc.).
- Standardized and centralized documents capturing, archiving, organized by projects
- Versioning (locking, access rights, work on the latest version),
- Control of access rights,

- Teamwork support (sharing, editing/reading rights, advanced search options).

In setting up an efficient collaboration information system that encompasses the monitoring of the document workflow, the project manager determines what information is needed by the three groups of users (general management, project manager, team member), the document flow within the project group and with the other stakeholders. Again, the balance between the formal (structured) communication and informal (unstructured) communication was the basis for creative and open collaborative work.

4 Conclusions

Increasing numbers of organizations are facing the complexity of multi-project management. Research on this subject is scarce, mainly focusing on specific aspects or single project management information support. We analysed the impact of implementation of a flexible cloud-based project management information system in a small Slovene R&D company, from the human resources, financial management, and collaboration points of view. For this purpose, we conducted a single-case study. Evidence in the three implementation phases was gathered using semi-structured interviews, document analysis and participants observations.

R&D groups are a set of creative people developing innovative solutions, but they have to be able to work with different stakeholders (financiers, part time workers, managers, and external partners). Furthermore, they have to follow strict project rules set by the financier, such as time plans, reporting, documenting, especially for complex national and EU funded projects. Working on a project very frequently means having flexible working hours, with peaks greatly exceeding 40-hour working weeks. The evidence revealed the importance of a systematic approach to supporting key areas of project management processes assessed by the companies' top managers and project managers. The findings support the proposed theory of keeping the balance of the creative processes that are unstructured, rule free and even chaotic, with structured processes to monitor and control them (Gerald, 2007).

Furthermore, the evidence revealed that the key to successful multi-project management is in the efficient support of the employees by empowering them in the process of work planning and reporting, transparent work evaluation and open communication. The results of the study suggest that the use of 4PM PMIS in support of multiple project management improves human resources and financial management in a collaborative and transparent way.

The most important lesson learned is about the process of implementation of a project management information system. The process of implementation itself should be transparent, the roles of individuals clearly defined, and the

implementation plan aligned with the organization strategies and internal rules. Finally, the organizations' top management has to support this quest in setting an example and creating conditions for the organizational culture to evolve in a way that each employee will adopt the system.

The drawback of this study is in the selection of one company whose organizational culture was already project oriented. Future research should thus focus on examining other types of organizations (bigger, bureaucratic, with more hierarchy levels, private and public).

Acknowledgements

This research was funded by the Slovenian Research Agency; Program No. P5-0018. We are also grateful to the studied company and the PMIS provider, who were willing to participate in this study by providing research material and insights into their business processes.

References

- Ahlemann, F. & Riempp, G. (2008). A Conceptual Reference Model for Project Management Information Systems. *Wirtschaftsinformatik*, 50(2), 88-97, <http://dx.doi.org/10.1365/s11576-008-0028-y>
- Ali, A.S.B. & Money, W.H. (2005). A Study of Project Management System Acceptance. *Proceedings of the 38th Annual Hawaii International Conference on System Sciences (HICSS'05)*, Vol. 8, pp. 234c, <http://dx.doi.org/10.1109/HICSS.2005.53>
- Ali, A.S.B., Anbari, F.T. & Money, W.H. (2008). Impact of organizational and project factors on acceptance and usage of project management software and perceived project success. *Project Management Journal*, 39(2), 5-33, <http://dx.doi.org/10.1002/pmj.20041>
- Bernroder, E.W.N., Sudzina, F., Pucihar, A. (2011). Contrasting ERP Absorption Between Transition and Developed Economies From Central and Eastern Europe (CEE). *Information Systems Management*, 28(3), 240-257, (Special Issue: Information Technology in Transition Economies), <http://dx.doi.org/10.1080/10580530.2011.585581>
- Checkland, P. (1999). *Systems Thinking, Systems Practice: Includes a 30-Year Retrospective*. Chichester: John Wiley and Sons Ltd.
- Cusumano, M. & Nobeoka, K. (1998). *Thinking beyond lean: how multi-project management is transforming product development at Toyota and other companies*. New York: Free Press.
- Dahlgren, J. & Söderlund, J. (2010). Modes and mechanisms of control in multi-project organizations: the R&D case. *International Journal of Technology Management*, 50(1), 1-22, <http://dx.doi.org/10.1504/IJTM.2010.031915>
- Elonen, S. & Arto, K.A. (2003). Problems in managing internal development projects in multi-project environments. *International Journal of Project Management*, 21(6), 395-402, [http://dx.doi.org/10.1016/S0263-7863\(02\)00097-2](http://dx.doi.org/10.1016/S0263-7863(02)00097-2)
- Engwall, M. & Jerbrant, A. (2003). The resource allocation syndrome: the prime challenge of multi-project management?

- International Journal of Project Management*, 21(6), 403-409, [http://dx.doi.org/10.1016/S0263-7863\(02\)00113-8](http://dx.doi.org/10.1016/S0263-7863(02)00113-8)
- Erno-Kjølhed, E. (2000). *Project Management Theory and the Management of Research Projects*. MPP Working Paper No. 3/2000, Copenhagen Business School. Retrieved July 7, 2013, from <http://openarchive.cbs.dk/bitstream/handle/10398/6308/wp32000.pdf?sequence=1>.
- Evaristo R. & Fenema P.A. (1999). Typology of project management: emergence and evolution of new forms. *International Journal of Project Management*, 17(5), 275–81.
- Gareis, R. & Huemann, M. (2003). Project management competencies in the project oriented company. In Turner, J.R. (ed.), *People in project management*, Aldershot: Gower.
- Geraldi, J.G. (2008). The balance between order and chaos in multi-project firms: A conceptual model, *International Journal of Project Management*, 26(4), 348–356, <http://dx.doi.org/10.1016/j.ijproman.2007.08.013>
- Grozniak, A., Weber, P. & Kern, T. (2011). Assessing organizational virtuality. *African Journal of Business Management*, 5(8), 3132-3138, <http://dx.doi.org/10.5897/AJBM10.348>
- Hendriks, M.H.A., Voeten, B. & Kroep, L. (1999). Human resource allocation in a multi-project R&D environment. *International Journal of Project Management*, 17(3), 181–188, [http://dx.doi.org/10.1016/S0263-7863\(98\)00026-X](http://dx.doi.org/10.1016/S0263-7863(98)00026-X)
- Kaiser, M.G., Ahlemann, F. (2010). Measuring Project Management Information Systems Success: Towards a Conceptual Model and Survey Instrument. ECIS 2010.
- Kerzner, H. (2003). *Project management, A systems approach to planning, scheduling and controlling*. New York: John Wiley and Sons.
- Kljajić Borštnar, M., Kljajić, M., Škraba, A., Kofjač, D., Rajkovič, V. (2011). The relevance of facilitation in group decision making supported by a simulation model. *System Dynamics Review*, 27(3), 270–293, <http://dx.doi.org/10.1002/sdr.460>
- Kobal, M. (2009). Agilno vodenje projektov z uporabo umetne inteligence, Dnevi slovenske informatike, 15-17 april 2009.
- Kroenke, D. M. (2008). *Experiencing MIS*. Upper Saddle River, NJ: Prentice Hall.
- Lee-Kelley, L. & Sankey, T. (2008). Global virtual teams for value creation and project success: A case study. *International Journal of Project Management*, 26(1), 51-62, <http://dx.doi.org/10.1016/j.ijproman.2007.08.010>
- Lindkvist, L., Söderlund, J. & Tell, F. (1998). Managing Product Development Projects: On the Significance of Fountains and Deadlines. *Organization Studies*, 19(6), 931-951, <http://dx.doi.org/10.1177/017084069801900602>
- Lipnack, J. (2000). *Virtual Teams: People Working Across Boundaries with Technology*. New York: John Wiley & Sons, pp. 352.
- Lundin, R. A. & Söderholm, A. (1995). A Theory of the temporary organization. *Scandinavian Journal of Management*, 11(4), 437-455, [http://dx.doi.org/10.1016/0956-5221\(95\)00036-U](http://dx.doi.org/10.1016/0956-5221(95)00036-U)
- Marjolein, C.J., Caniels, R. & Bakens, J.J.M. (2012). The effects of Project Management Information Systems on decision making in a multi project environment, *International Journal of Project Management*, 30(2), 162-175, <http://dx.doi.org/10.1016/j.ijproman.2011.05.005>
- Martinsuo, M. & Lehtonen, P. (2007). Role of single-project management in achieving portfolio management efficiency, *International Journal of Project Management*, 25, 56–65, <http://dx.doi.org/10.1016/j.ijproman.2006.04.002>
- Mortensen, M., Woolley, A. W., & O'Leary, M. B. 2007. Conditions Enabling Effective Multiple Team Membership. In K. Crowston, S. Sieber, & E. Wynn (Eds.), *Virtuality and Virtualization*, Vol. 236, pp. 215-228. Boston: Springer
- Nandhakumar, J. & Jones, M. (2001). Accounting for time: managing time in project-based teamworking. *Accounting, Organizations and Society*, 26(3), 193-214, [http://dx.doi.org/10.1016/S0361-3682\(99\)00051-3](http://dx.doi.org/10.1016/S0361-3682(99)00051-3)
- Packendorff, J. (1995). Inquiring into the Temporary Organization: New Directions for Project Management Research. *Scandinavian Journal of Management*, 11(4), 319-334, [http://dx.doi.org/10.1016/0956-5221\(95\)00018-Q](http://dx.doi.org/10.1016/0956-5221(95)00018-Q)
- Payne, J.H. & Turner, J.R. (1999). Company wide project management: the planning and control of programmes of projects of different types. *International Journal of Project Management*, 17(1), 55–59, [http://dx.doi.org/10.1016/S0263-7863\(98\)00005-2](http://dx.doi.org/10.1016/S0263-7863(98)00005-2)
- Project Management Institute - PMI. (2001). *A guide to the Project Management Body of Knowledge (PMBok)*. Newtown Square.
- Rainer, R. K., Turban, E., Potter, R. E. & Cegielski, C. G. (2010). *Introduction to Information Systems: Enabling and Transforming Business* (Third Edition). New York: John Wiley & Sons.
- Ratcheva, V. (2009). Integrating diverse knowledge through boundary spanning processes – The case of multidisciplinary project teams, *International Journal of Project Management*, 27(3), 206-215, <http://dx.doi.org/10.1016/j.ijproman.2008.02.008>
- Raymond, L. & Bergeron, F. (2008). Project management information systems: An empirical study of their impact on project managers and project success, *International Journal of Project Management*, 26(2), 213–220, <http://dx.doi.org/10.1016/j.ijproman.2007.06.002>
- Shenhar, A. & Dvir, D. (1996). Toward a typological theory of project management. *Research Policy*, Vol. 25(4), 607-632, [http://dx.doi.org/10.1016/0048-7333\(95\)00877-2](http://dx.doi.org/10.1016/0048-7333(95)00877-2)
- Turner R., Ledwith A. & Kelly J. (2012). Project management in small to medium-sized enterprises: Tailoring the practices to the size of company, *Management Decision*, 50(5), 942 – 957, <http://dx.doi.org/10.1108/00251741211227627>
- Van der Merwe, A.P. (1997). Multi-project Management - organizational structure and control. *International Journal of Project Management*, 15(4), 223-233, [http://dx.doi.org/10.1016/S0263-7863\(96\)00075-0](http://dx.doi.org/10.1016/S0263-7863(96)00075-0)
- Yin, R.K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Zika-Viktorsson, A., Sundström, P. & Engwall, M. (2006): Project overload: An exploratory study of work and management in multi-project settings. *International Journal of Project Management*, 24(5), 385-394, <http://dx.doi.org/10.1016/j.ijproman.2006.02.010>

Mirjana Kljajić Borštnar holds a Ph.D. in the area of Information Systems Management from the University of Maribor. Her research work covers expert systems, multi-criteria decision-making, and Information Systems development methods. She holds a position of an Assistant Professor and is a member of Laboratory for Decision Processes and Knowledge-Based Systems. Her recent research work is focused on experiments with decision groups applying system dynamics simulators in

experimental, interactive learning, and living laboratory environments. She is involved in several EU and industry projects. She is the author and co-author of several scientific articles published in recognized international journals including Group Decision and Negotiation and System Dynamics Review. She is also a program committee chair of annual international Bled eConference (<http://BledConference.org>).

Andreja Pucihar holds a Ph.D. in the area of Information Systems Management from the University of Maribor. Her research work is mainly focused to e-business, new e-business models, social media and web 2.0, living labs and open

innovation. She has published over 130 papers in journals and conference proceedings, including in Electronic Markets, The International Journal on Networked Business and Information Systems Management. She holds a position of an Assistant Professor and is a member of E-business laboratory. She is involved into several EU and industry projects. She is a member of the boards of the following international journals: »Electronic Markets - The International Journal on Networked Business«, »Journal of Theoretical and Applied Electronic Commerce Research« and »International Journal of Information Systems & Social Change«. She is also a program committee chair of annual international Bled eConference (<http://BledConference.org>).

Vpliv uvedbe informacijskega sistema za večprojektno vodenje – študija primera v malem raziskovalno razvojnem podjetju

Ozadje: Problemi upravljanja virov kadrov, financ in časa v večprojektni organizaciji so po naravi kompleksni, zato jih moramo obravnavati celovito tako v velikih, kot manjših organizacijah. Pri tem je potrebno zagotoviti odprto komunikacijo med zaposlenimi in med partnerskimi organizacijami. Obstaja več metodologij in orodij za podporo projektne delu, vendar so slabo sprejete, predvsem v manjših organizacijah. Razlogi ležijo v prekompleksnosti metod in njihovi naravnosti na vidik enega projekta.

Cilji: Cilj tega prispevka je analizirati vpliv uvedbe prilagodljivega spletnega informacijskega sistema za projektni management z vidika kadrovskega in finančnega managementa ter sodelovanja.

Metode: V ta namen smo izvedli študijo primera v manjšem slovenskem raziskovalno-razvojnem podjetju, ki je uvedlo spletno rešitev za večprojektno vodenje 4PM.

Rezultati: Rezultati poudarjajo pomembnost ohranjanja ravnovesja med nestrukturiranim kreativnim procesom, ki poteka brez pravil in celo kaotično, in potrebo po strukturiranemu spremljanju in kontroli projektov.

Zaključki: Rezultati študije nakazujejo, da uporaba rešitve 4PM učinkovito podpira upravljanje več-projektne organizacije, pozitivno vpliva na zadovoljstvo in sodelovanje zaposlenih ter omogoča preglednejše vodenje financ.

Ključne besede: več projektni management, projektni informacijski sistem, sistemski pristop, majhna organizacija

DOI: 10.2478/orga-2014-0003

The Transfer of Knowledge in Intra-Organizational Networks: A Case Study Analysis

Włodzimierz Sroka¹, Joanna Cygler², Bożena Gajdzik³

¹Department of Management, Academy of Business in Dąbrowa Górnicza, Ciepłaka Street 1c, 41-300 Dąbrowa Górnicza, Poland, wsroka@wsb.edu.pl (corresponding author)

²Warsaw School of Economics, Institute of Economics, Niepodległości ave. 162, 02-554 Warszawa, Poland, cygler@sgh.waw.pl

³Department of Materials Science & Metallurgy, The Silesian University of Technology in Gliwice Akademicka street 2A, 44-100 Gliwice, Poland, bozena.gajdzik@polsl.pl

Background: In today's business environment, a company is able to maintain its competitive position if it constantly generates knowledge and disseminates this knowledge within the organization, as well as transforms it into new competences. The ability to transfer knowledge becomes one of the key factors in the improvement of a company's competitive position. This hypothesis is applicable particularly in the case of cooperation within networks, as they are an excellent opportunity for mutual learning between partners.

Objectives: The purpose of the paper is to analyse the process of knowledge transfer in intra-organizational networks.

Method: Due to the specificity of the research object, the case study method has been chosen. In order to make an in-depth analysis of the case study, we selected a group of several criteria based on the theory which we believe to be fundamental to the effectiveness of knowledge management in networks, and compared them with the situation in the ArcelorMittal Group.

Results: Our research show that ArcelorMittal Group has met almost all the criteria of effective knowledge management in its intra-organizational network. Some exceptions, albeit merely to an extent, are mostly the result of historical circumstances, i.e. the process of growth through acquisitions, and the acquisition of companies at different stages of organizational development, as well as organizational culture.

Conclusion: Based on theoretical assumptions, the study analysed in details the components of knowledge management applied by the corporation in question. Therefore this study might be utilised to formulate a refutable hypothesis and verify them on a larger group of companies from different sectors of the economy. The main limitations of the paper are mostly related to the inherent approach therein.

Keywords: knowledge, knowledge transfer, knowledge management, network, case study analysis

1 Introduction

In recent years, many strategic management scholars have paid close attention to knowledge management, both at the organizational level (e.g. Spender and Grant, 1996; Argote et al., 2003) as well as in terms of inter-organizational cooperation (Powell, 1998; Ingram and Simons, 2002; Lake and

Erwee, 2005; Eunni et al., 2006). The concept of knowledge management goes beyond the single-discipline, covering the areas of strategic management, economics, information systems, psychology and sociology. This diversity has contributed to the rapid progress of knowledge in various areas of organizational learning and knowledge management. Knowledge-oriented concepts which had previously

been little known, such as “organizational competence”, “organizational learning”, “intangible assets”, “organizational capacity”, or “tacit knowledge”, have become widely used; and key competencies of organizations are thus based on the finding and creation of knowledge.

It is claimed that companies which do not actively manage knowledge as a key resource will not be able to sustain growth and competitiveness (Conradie, 2010). In today’s business environment, a company is able to maintain its competitive position if it constantly generates knowledge and disseminates this knowledge within the organization, as well as transforms it into new competences (Nonaka, 1991). The ability to transfer knowledge becomes one of the key factors in the improvement of a company’s competitive position. This hypothesis is applicable particularly in the case of cooperation within networks, as they are an excellent opportunity for mutual learning between partners. For example, Goerzen (2007) claims that through participation in networks, companies obtain swift access to knowledge and information which would otherwise be inaccessible.

The paper is structured as follows: first, we review the literature on knowledge and knowledge management in intra-organizational networks. The main sources of theoretical analysis are scientific journals, specifically those publications devoted to knowledge management in alliance networks. Based on this review, we then present guidelines for knowledge transfer within such networks. The following section concentrates on a case study analysis based on the ArcelorMittal Group, which has successfully implemented the Knowledge Management Program. Finally, we discuss the results of our study and draw some conclusions as well as presenting the limitations of our research.

2 Literature review

Knowledge has emerged as the most strategically significant resource of today’s business enterprise (Grant, 1996) and a core component of a company’s strategic intent. If an enterprise wants to improve its competitiveness, it has to acquire new competences obtained through cooperation with other entities, as cooperative relationships with competitors constitute a potential alternative to the generation of internal knowledge (Richter and Vettel, 1995). Networks between companies are an effective way to create competitive advantage through a combination of the complementary resources of network members (Gilsing and Lemmens, 2007). The structure of the network affects the process of knowledge transfer within the network, and companies occupying a central position in an intra-organizational network are characterized by greater innovation, as a result of better and wider access to knowledge (Tsai, 2001).

The frequency of contacts between the parties positively affects the quality and speed of knowledge transfer (Uzzi, 1991), and stronger relationships within an intra-organiza-

tional network favour the transfer of complex knowledge, while weaker ties prefer the transfer of simple knowledge (Hansen, 1999). In turn, if there are structural holes amongst network members, its innovativeness will be lesser (Ahuja, 2000). Moreover, the more organizational units which are of key importance to the network, the quicker the transfer of knowledge (Tang, 2011).

The process of knowledge transfer is based on the concept of the learning organization which facilitates the acquisition of experience and learning (Hamel, 1991). Companies which want to enhance competitiveness through knowledge management can only achieve this if there is a culture of learning. There is an inter-relationship between knowledge and organizational learning, and learning plays an important role in ensuring that knowledge is created and transferred to promote innovation. The shared values of innovation and learning need to be managed and utilized successfully to sustain economic growth and competitive advantage (Kok, 2004). In addition, this knowledge would be better transferred, absorbed and utilized if the members of the network were more closely related (both vertically and horizontally). This is directly related to the increase in mutual trust and reduction of opportunistic behaviour (Blois, 1990).

A key success factor in the transfer of knowledge within networks is absorption. When acquiring new knowledge, organizational units use their existing skills and knowledge (Zahra, 2002). The level of knowledge absorption in the network is also the result of absorption of individuals involved in the creation of this unit. Therefore the formation of creative and professional teams is a necessary condition for the maintenance of a sufficiently high level of absorption. There are two factors affecting a company’s absorptive capacity. One relates to the internal factors, such as organizational structure, size, strategy, prior knowledge base, and organizational responsiveness; the other one is external factors, which include external knowledge environment and a firm’s position in knowledge networks (Lee & Chi Wu, 2010).

Equally important to the quality of knowledge transfer is the sender’s ability to spread. These issues have received much less attention from researchers, despite the importance of the knowledge sender’s disseminative capacity to the success of the transfer. Parent et al. (2007) explain this capacity as “the ability to contextualize, format, adapt, translate and diffuse knowledge through a social and/or technological network and to build commitment forms of stakeholders”. Disseminative capacity is related to the likelihood of precise, clear and effective articulation and transfer of knowledge to other members of the network. These capabilities include the transfer of knowledge in conceptual form, and the familiarization of customers with its practical implementation.

It is increasingly stressed that the transformation of knowledge possessed by the sender into value which has value for customers, is needed (Kulken and van der Sijde, 2010). Therefore, the sender should have creativity, knowl-

edge, communication skills and the appropriate personality traits. The knowledge transfer is faster if the sender's ability to disseminate knowledge is greater. This, however, depends on the degree of homogenization of the network and the strategy of its members, as well as on the uniformity and strength of organizational culture (Abrahamson and Fombrum, 1994). However, disseminative capacity depends not only on the skill of the sender, but also on its willingness to transfer knowledge. Research undertaken by Minbaeva and Michailova (2004) show that the disseminative capacity of knowledge senders is greatly increased when there exist both the ability and willingness to transfer knowledge, both of which are crucial to the quality of this process.

Another factor influencing the quality of knowledge transfer is its inherent nature. Organizational knowledge can be divided into explicit knowledge, which is to say knowledge which can be codified; and tacit knowledge which is hidden and difficult to indicate (Polanyi, 1966). No difficulties are usually encountered in the transfer of codified knowledge, but its value to the organization is lower than for tacit knowledge. Although hidden knowledge is extremely beneficial for the company, it is also very difficult to transfer it to partners within a network. The main reason is the fact that understanding and explaining this knowledge requires a significant period of time, and therefore slows down the development of new products or production competences. Johannessen and Olsen (2003) also claim that tacit knowledge can be a barrier to innovation because it is usually part of a long-term learning process in a specific environment. On the other hand, Barney (1991) claims that tacit knowledge is regarded as a basis for the creation of competitive advantage.

In addition, Szulanski (1996) pointed out the danger of multiplicity and ambiguity in the interpretation of transferred knowledge and its relative novelty. Knowledge, especially informal, can be interpreted differently by the recipients according to their perception and prior experience. The problem arises when there is a network in which knowledge transfer is multilateral, and both direct and indirect. In turn, knowledge which has no documentary history causes substantial complications in the transmission and reception thereof, in terms of an intra-organizational network. It requires the parties to develop their own procedures for the reporting, acquisition and exploitation of the new knowledge. One then expects greater flexibility, openness, innovation and the commitment of all network members and their appropriate capacity, depending on their functions both within the network and in the process of knowledge transfer.

The transfer of knowledge in an intra-organizational network requires certain procedures and rules. It has been claimed that each network would be better advised to develop its own programs, depending on different factors such as: strategy, the network structure and specificity of network members, type of knowledge being transferred, etc. The program of knowledge transfer in an intra-network

defines the rules regarding the selection of knowledge to be transferred to the different groups of customers at the proper time (Hutzschenreuter and Horstkotte, 2010). The transfer of knowledge is much more efficient when the parties involved in the cooperation processes are similarly trained and educated (Reagan & McEvily, 2003).

It is worth noting that the central unit is the initiator of the creation of knowledge transfer in an intra-organizational network. However, bottom-up initiatives are also valuable. A knowledge transfer program is characterised by substantial flexibility, and varies depending on the nature and needs of the network members; the strategic goals of the organization; as well as its organizational and financial resources. It requires a certain level of specialization from the members of the network. The specialization of companies in the network is associated with the division of labour and tasks between them, which may be more or less intense. Both cases are related to the need for the exchange of knowledge in terms of products and processes, as well as proper coordination thereof (Kotabe et al. 2003). Research confirms the usefulness of both formal and informal relationships between member companies in terms of access to knowledge and its transfer between partners. Such companies benefit from cooperation in that they are then able to improve their core competencies (Lorenzoni and Lipparini, 1999).

We have presented only selected information and data regarding knowledge and knowledge management which can be found in the literature. The chosen works exhibit some common features in that all the authors underline the importance of knowledge, both at the organizational level as well as at the network level. Therefore, knowledge requires proper management; and the process of the transfer of knowledge is especially important in networks due to the following factors: (a) the different members of the network and their specificity, (b) the network structure, (c) the type of knowledge transferred, (d) expertise, and (e) distribution channels. All these elements create a system of knowledge transfer within the network. The quality of this system will depend both on its individual components as well as the system as a whole. On the other hand, a properly designed knowledge transfer system is a prerequisite for the effective transfer of knowledge in the network which can in turn generate a competitive advantage. Table 1 presents a summary of the most important approaches and concepts related to the knowledge transfer in the networks.

3 Case Study Analysis

3.1 Choice of methodology

Welch et al. (2011) claim that the case study has an established place in qualitative international business research. This is not surprising, given its potential to generate novel and ground breaking theoretical insights. Case studies pro-

Table 1: The most important approaches and concepts related to the knowledge transfer in the networks.

No.	Author	Description of the approach
1.	Gilsing and Lemmens, 2007	Networks between companies are an effective way to create competitive advantage through a combination of the complementary resources of network members.
2.	Tsai, 2001	The structure of the network affects the process of knowledge transfer within the network; companies occupying a central position in an intra-organizational network are characterized by greater innovation, as a result of better and wider access to knowledge.
3.	Uzzi, 1996	The frequency of contacts between the parties positively affects the quality and speed of knowledge transfer.
4.	Hansen, 1999	The stronger relationships within an intra-organizational network favour the transfer of complex knowledge, while weaker ties prefer the transfer of simple knowledge.
5.	Ahuja, 2000	If there are structural holes amongst network members, its innovativeness will be lesser.
6.	Tang, 2011	The more organizational units which are of key importance to the network, the quicker the transfer of knowledge.
7.	Hamel, 1991	The process of knowledge transfer is based on the concept of the learning organization which facilitates the acquisition of experience and learning.
8.	Zahra, 2002	A key success factor in the transfer of knowledge within networks is absorption. When acquiring new knowledge, organizational units use their existing skills and knowledge.
9.	Kulken and van der Sijde, 2010	The transformation of knowledge possessed by the sender into value which has value for customers, is needed. Therefore, the sender should have creativity, knowledge, communication skills and the appropriate personality traits.
10.	Abrahamson and Fombrum, 1994	The knowledge transfer is faster if the sender's ability to disseminate knowledge is greater. This depends on the degree of homogenization of the network and the strategy of its members, as well as on the uniformity and strength of organizational culture.
11.	Polanyi, 1966	An important factor influencing the quality of knowledge transfer is its inherent nature. No difficulties are usually encountered in the transfer of explicit (i.e. codified) knowledge. In turn, tacit (hidden) knowledge is very difficult to transfer to partners within a network. The main reason is the fact that understanding and explaining this knowledge requires a significant period of time, and therefore slows down the development of new products or production competences.
12.	Johannessen and Olsen 2003	Tacit knowledge can be a barrier to innovation because it is usually part of a long-term learning process in a specific environment.
13.	Barney (1991)	Tacit knowledge is regarded as a basis for the creation of competitive advantage.
14.	Szulanski, 1996	The danger of multiplicity and ambiguity in the interpretation of transferred knowledge and its relative novelty.
15.	Hutzschenreuter and Horstkotte, 2010	The transfer of knowledge in an intra-organizational network requires certain procedures and rules. It defines the rules regarding the selection of knowledge to be transferred to the different groups of customers at the proper time.
16.	Reagan and McEvily, 2003	The transfer of knowledge is much more efficient when the parties involved in the cooperation processes are similarly trained and educated.

Source: own elaboration

vide the research framework within which an observation and analysis of behaviour in relation to both structure and mechanisms can be conducted (Klonoski, 2013). They are generally constructed to explain the mechanism contributing to a described event and to interpret its social, cultural and organizational meanings rather than to create predictions about future events (Wynn and Williams, 2012). Given these considerations, the case study method has been chosen due to two main reasons. The first was the specificity of the research object. Another reason was in-depth local knowledge of the authors of the object analysed. As Fenno (1986) claims, if the researchers have this local knowledge they are in a position to “soak and poke”, and thus to offer reasoned lines of explanation based on this rich knowledge of setting and circumstances. This knowledge is the result of the author’s work in the object in question. Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods (Thomas, 2011). Yin (1981) indicates that the case study method can be employed if “it attempts to examine: (a) a contemporary phenomenon in its real-life context, especially when (b) the boundaries between phenomenon and context are not clearly evident”. Our research object fulfils both conditions.

Case study research can be used to generate and test theories within a positivist paradigm (Eisenhardt, 1989). Furthermore, a recent review of articles published in four core international business journals over a 10-year period found case studies to be the most popular qualitative research strategy (Piekkari et al. 2009). An analysis of the complexity of the network (including the transfer of knowledge) requires a comprehensive approach, which is supported by case study research. The case presented in this paper is more descriptive than explanatory or exploratory (Yin, 1994), in which the key issue is to describe the phenomenon, together with the circumstances of its occurrence (Mitchell, 1980). This, however is also an another advantage of the case study presented, as the readers will have an opportunity to learn about the problems with knowledge management which they may encounter. Therefore it may be also useful for the companies operating in a variety of industries.

On the other hand it should be noted that there are indeed both advantages and disadvantages of this research method. The advantages of the case study method include its applicability in such cases when the research object is difficult to examine through quantitative methods, or when it is relatively new (in other words when a lack of previous studies exist in the literature). This method is also flexible and creative (Patton, 2002; Marelli, 2007). In turn, the weakness of this method includes the emotional attitudes of researchers to the object of the study, which may affect the objectivity of the conclusions (Smith, 1990) and the requirement for a high level of analytical abilities and writing skills. Welch et al. (2011) also observe that literature on case studies has tended to focus on the methods of data collection and analy-

sis rather than the methods of theorizing from case studies. Therefore, as has been stated by Tsang (2012), the theorizing potential of case studies has not been fully realized in the field of international business research.

3.2 Description of ArcelorMittal Group

The case study analysis concentrates on the steel industry, and more specifically on ArcelorMittal, the world leader in this industry. The research object was selected because of the following reasons:

- ArcelorMittal is a wide capital group which crates the network in international scale. This geographical dispersions requires a constant shaping the effective transfer of knowledge within the network;
- previous research confirmed the existence of network connections in Polish steel industry (e.g. Lisiński et al. 2012; Sroka 2012) and ArcelorMittal controls approx. 70 percent of Polish steel sector capacity. It can then be assumed that the network connections can be applied to the whole corporation;
- in the frame of its intra-organizational network, the group has developed the original solutions related to processes as well as structures of knowledge transfer (e.g. Sroka, 2010 b). This is unquestionable and influences the market, organizational, as well as financial results of the whole group;
- successes and failures in the process of knowledge transfer are not a specific feature of this corporation only. They have a universal nature and can be applied by other corporations with a similar geographical scope and/or branch relationship. Growing globalization causes that the experiences of some corporations can be analyzed and utilized by the others.

The steel sector is highly differentiated in terms of strategic orientation. The following normative categorisation can be used as an overall framework for describing the industry (Boston Consulting Group, 2007):

- global players,
- regional champions,
- niche specialists.

Arcelor-Mittal (which was set up in 2006 as a result of about 50 smaller transnational mergers, where Arcelor originated from Arbed in Luxembourg, Usinor in France and Aceralia in Spain) is a true global player in the steel industry. It has a world-wide network with production facilities in each region and a full range of products, producing more than 50 million tonnes, and has backward integration. It is a worldwide leader in the steel industry, a fact which increases its bargaining power with suppliers and consumers alike. No consolidation transaction in the steel industry prior to this merger was of either comparable scale or scope (Sroka, 2010a). External growth is treated as the main stra-

tegic direction of the group, which is treated as the only “truly global” steel company. ArcelorMittal is the leader in all markets which it serves, i.e. the automotive industry, primary transformation, construction, household appliances, metal processing, general industry, packages etc. The revenues of ArcelorMittal reached \$105 billion in 2007 and market share increased to almost 10 percent (Granboualan et al. 2008). One year later revenues reached \$124,9 billion and total production rose to 103 million tons of steel. The group also occupies a world-leading position in the field of research and development (Wiechoczek, 2009).

A characteristic feature of the ArcelorMittal Group is the network connections between its particular companies. Additionally, the ArcelorMittal Group includes a number of companies situated in former Soviet Union bloc countries (Poland, Romania, the Czech Republic, Ukraine, and Kazakhstan), so the organizing of production activities is broadly similar in each steelworks. Relations between organizational units are horizontal in nature, and hierarchical in terms of relations with headquarters. Intra-organizational cooperation relations include both branch level, and corporate level. Those units cooperate with each other, while at the same time facing internal competition. Therefore, it can be said that ArcelorMittal Group is a prototypical example of an intra-organizational network, with a number of steel divisions located throughout the world. In other words, it represents all the features of such a network.

3.3 Knowledge Management Program

We analysed the assumptions of knowledge management programs within the ArcelorMittal Group, which had previously implemented the assumptions of knowledge transfers internally (ArcelorMittal Knowledge Management Program - KMP). A key component of the program is the participation of managerial staff in the “Manager Academy”. The Manager Academy Program was implemented in 2006 and comprises three main blocks (Gajdzik, 2008):

- Fundamentals and knowledge – its purpose is to construct new employee approaches and new organizational culture and goodwill,
- Management skills – covering performance management, leadership, personal effectiveness, and team leadership; generally speaking its purpose is to improve the skills and competences of the management staff,
- Professional skills – consisting of training in innovative and analytical thinking, dealing with stress, decision making, labour law, recruitment interviews, lean manufacturing, value chain management, project management, commercial negotiations and negotiation techniques, business communication, change management, and conflict resolution.

The Program has a long-term perspective and, within ArcelorMittal Poland only, three subsequent editions were

undertaken, each for around 300 people. The Program was broken down into four levels: level 1 – top management; level 2- senior management; level 3 – middle-level management; and level 4 – junior management.

This project is part of the Global Development Executive Program. It is assumed that executives will gain new analytical, interpersonal, managerial, as well as leadership skills, which should inspire them to make changes at different levels of the corporate hierarchy. Lower-level employees can use the knowledge available through the system of human resource development (International Corporate Training and Development Program) via the Intranet and the Internet.

ArcelorMittal implemented an e-learning program in which employees have access to, inter alia, the Global English Service (<http://www.globalenglish.com>), enabling them to learn English; Online Training Center (OTC) Thomson NETg (<http://www.netglearning.com>) which functions as the training centre for the following departments: accounting and finance, customer service, human resource management, sales, marketing, project management; Business Book Review – literature which is thematically linked to the production processes; and Steel University, an English-language dictionary containing vocabulary specific to the steel industry.

Another important component of the program is the exchange of knowledge and experience amongst the employees of the corporation as a whole. It is worth adding that such an exchange of knowledge relates to both the senior management level and individual employees, as part of the ‘crossing’ process. Crossing means that employees in identical positions perform the same tasks in other divisions of the corporation.

The group organizes internal meetings, treating them as part of the exchange of experience; holds meeting with experts and scholars outside its structures; as well as participating in national and international conferences, symposia and workshops. Generally, the group systematically organizes training sessions in order to cover all potentially problematic areas (customer service, industrial safety, SAP rules, legal regulations, etc.). It is estimated that approximately 35 percent of its staff are trained every year, and furthermore that knowledge is distributed via an effective system of communication.

Based on the analysis of ArcelorMittal’s activities devoted to knowledge management, it is clear that the sharing of knowledge and the implementation of best practices are integral to its management philosophy. Through its global Knowledge Management Program, ArcelorMittal shares, develops and utilizes its knowledge and experience across all the existing facilities and subsidiaries to accelerate improvement in business performance. The KMP comprises all key functional areas, such as procurement, marketing, logistics, health and safety, steel production and processing, and customer service. The KMP includes ongoing benchmarking, regular technical meetings and information-

sharing at the corporate, regional and operational levels to drive improvement in performance, enabling each business unit to benefit from economies of scale and access to the best practices and experience available within the corporation. Therefore, the KMP contributes to enhanced quality, productivity and profitability across the whole group.

4 Theoretical assumptions vs. case study analysis – comparison

In order to make an in-depth analysis of the case study, we selected a group of several factors (criteria) based on the theory which we believe to be fundamental to the effectiveness of knowledge management in networks, and compared them with the existing situation in the ArcelorMittal Group. The results are presented in Table 2.

An analysis of Table 2 shows that ArcelorMittal Group has met all the criteria of effective knowledge management in its intra-organizational network. Some exceptions, albeit merely to an extent, are mostly the result of historical circumstances, i.e. the process of growth through acquisitions, and the acquisition of companies at different stages of organizational development, as well as organizational culture. This can limit the ability to absorb knowledge; however not excluding it completely, of course. Another issue relates to competition, which is mostly a feature of inter-organizational networks. The nature of the ArcelorMittal

network, which can be classified as intra-organizational, means that aspects of cooperation dominate the competition; yet some limited level of competition exists, and has a positive effect.

One of the key elements of modern management is knowledge management, a thesis which is borne out by the results of ArcelorMittal operations. It posted a net profit of \$2.26 billion in 2011. In turn, 2012 was a very difficult year for the steel industry, particularly in Europe, where the demand for steel fell a further 8.8 percent, and the slow-down in China's economy. As a result, ArcelorMittal posted a net loss of \$3.73 billion. The company's sales were also down 10.39 percent to \$84.21 billion in 2012. To give but one example, due to overcapacity and reduced demand in Europe, ArcelorMittal had 9 of 25 blast furnaces sitting idle, and in October 2012 it permanently shut down two blast furnaces at its steel plant in Florange (France). However, one expects an improvement in the situation in 2014. The worsening in results from last year cannot, however, change the opinion as to the efficiency of the knowledge management system which exists across the group as a whole.

5 Conclusions and limitations of the paper

The transfer of knowledge between companies in a network is a complex matter, certainly more difficult than in the case

Table 2: Key factors of effective knowledge management in networks: theory vs. practice

No.	Factors (criteria) fundamental to effective knowledge management in a network	ArcelorMittal Group
1.	Knowledge management as part of the company's business strategy and mission, as well as business objectives and processes	Knowledge sharing and implementing best practices is an integral part of ArcelorMittal's management philosophy.
2.	Implementation of the "learning organization" concept	Implemented in the group: constant learning, training on different levels, Manager Academy.
3.	Ability to absorb knowledge	Differentiated, depending on the particular capacities of the member companies (the steel plants are located in all continents; including companies from EU countries, such as Germany, France, Poland, as well as non-EU members such as Kazakhstan, India, Ukraine, Algeria, Trinidad and Tobago or USA). The infrastructure of the companies situated in these countries as well as the skills and competences of the employees are varied. As the result, the ability to absorb knowledge also differs. Generally one claims that the ability to absorb knowledge is higher in the companies located in the well developed economies such as Germany, USA, France.

Table 2: Key factors of effective knowledge management in networks: theory vs. practice (continued)

No.	Factors (criteria) fundamental to effective knowledge management in a network	ArcelorMittal Group
4.	Trust between network members	The intra-organizational network at ArcelorMittal promotes the existence of trust between its members. The main reason is the type of relationships within the ArcelorMittal network. The nature of the network, i.e. intra-organizational one causes that there is no danger of economic intelligence and information leakage as the companies are the members of the same corporation. Opportunistic behaviour is also limited.
5.	Character of the relationships within the network (strong vs. weak) promoting the transfer of complex knowledge	Strong relationships between members of the intra-organizational network of ArcelorMittal, facilitating exchange of complex technical knowledge on steel manufacturing processes (e.g. improvement of the operational effectiveness of the blast furnace, converter, steel melting shop or continuous casting).
6.	The central unit as the initiator of the knowledge transfer	The Group HQ is the initiator of the knowledge transfer, however bottom-up initiatives are also highly welcome; meetings between managers from particular functional areas in different companies and/or subsidiaries.
7.	Knowledge Management Programs and the clarity of rules therein	Existence of Knowledge Management Programs in different parts of the value chain: procurement & logistics, production, sales, etc.
8.	Existence of an effective communication system and infrastructure	Very effective communication system, as well as information infrastructure in all facilities and subsidiaries. Existence of SAP, i.e. an integrated software solution of ERP type that incorporates the key business functions of the whole corporation.
9.	Existence of cooptation, i.e. simultaneous cooperation and competition between network members	To some extent and related mostly to the group's subsidiaries; however, this positively affects the operational activity of the group as some degree of competition stimulates greater innovation.
10.	Frequency of contacts between network members	Often meetings (and benchmarking meetings), teleconferences and videoconferences between managers from the steel plants located throughout the world. Visits of the selected managers in the steel plants belonging to the group to share knowledge and skills.
11.	Creation of the task teams in order to perform certain actions	Widely implemented and utilised; every new acquisition is prepared and managed at the first stage by a selected group of experienced managers from different parts of the value chain: finance, sales, production, accounting, logistics etc. The same relates to the solving problems which are encountered during operation and/or tasks imposed.
12.	Division of labour and tasks	Widely applied; inter disciplinary teams consisting of specialists from different divisions of the group.
13.	Existence of internal procedures and rules associated with knowledge management	Not confirmed in 100 %, however, based on the data presented above, one should assume that such procedures really exist within the group.

of individual companies. However, a properly designed transfer system is a prerequisite for effective knowledge transfer in an intra-organizational network, which can assist in the generation of competitive advantage. It has even been claimed that one of the strategic options open to the steel industry is to engage in strategic networking and knowledge sharing within R&D in energy-improving technologies (Study, 2008). High priority is given to innovation and close cooperation with customers with regard to development.

ArcelorMittal Group has implemented the assumptions of knowledge management program within its corporation. Almost all the criteria of effective knowledge management in its intra-organizational network have been met by the group. Some exceptions, albeit merely to an extent, are mostly the result of historical circumstances, i.e. the process of growth through acquisitions, and the acquisition of companies at different stages of organizational development, as well as organizational culture. For example, there are the companies both from developed as well as developing countries in the group. Algeria, Kazakhstan, Ukraine and some other economies belong to the latter group. This can limit the ability to absorb knowledge; however not excluding it completely, of course.

The case study analysed the particular situation of the global corporation operating in the steel industry. Based on theoretical assumptions, it analysed in details the components of knowledge management applied by the corporation in question. Therefore this case study may be utilised to put the hypotheses and verify them on a larger group of companies from different sectors of the economy. The universal nature of the case presented, i.e. the possibility to apply the findings of the paper in by the companies operating in a variety of sectors is the most important implication for the practice. Thus it could be regarded as our contribution to the existing knowledge about learning and knowledge transfer in networks.

The main limitations of the paper are mostly related to the inherent approach therein. It constitutes a case study analysis based on a particular global corporation, which operates in a traditional sector of the economy. Moreover, the group has successfully implemented the assumptions of a knowledge management program, which cannot be said of every company. Therefore, it is not possible to argue definitively that this concept would succeed in other companies, e.g. in high-tech industries.

Literature

- Abrahamson, E. & Fombrun, C.J. (1994). Macro cultures: determinants and consequences. *Academy of Management Review*, 19(4), 728-755.
- Ahuja, G. (2000). Collaboration networks, structural holes and innovation: a longitudinal study. *Administrative Science Quarterly*, 45(3), 425-455, <http://dx.doi.org/10.2307/2667105>
- Argote, L., McEvily, B. & Reagans, R. (2003). Managing knowledge in organizations: an integrative framework and review of emerging themes. *Management Science*, 49(4), 571-582. <http://dx.doi.org/10.1287/mnsc.49.4.571.14424>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120, <http://dx.doi.org/10.1177/014920639101700108>
- Blois, K.J. (1990). Transaction costs and networks. *Strategic Management Journal*, 11(6), 493-496, <http://dx.doi.org/10.1002/smj.4250110607>
- Boston Consulting Group (2007). Beyond the boom - the outlook for global steel. Available at: <http://www.bcg.pt/documents/file14947.pdf> (accessed 29 September 2013).
- Buckman, K. (2006). Taking knowledge sharing to the next level. Available at: <http://www.knowledge-nurture.com> (accessed 28 March 2010).
- Conradie, P. (2010). Knowledge management as a sustainable competitive advantage in the steel industry". Mini-dissertation submitted in partial fulfilment of the requirements for the degree Master in Business Administration at the Vanderbijlpark campus of the North-West University, available at: <http://dspace.nwu.ac.za/handle/10394/4806>
- Eisenhardt, K.M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550, <http://dx.doi.org/10.2307/258557>
- Eunni, R.V., Kasuganti, R.R. & Kos, A.J. (2006). Knowledge management processes in international business alliances: a review of empirical research. 1990-2003, *International Journal of Management*, 23(1), 34-42.
- Fenno, R. (1986). Observation, context, and sequence in the study of politics. *American Political Science Review*, 80(1), 3-15, <http://dx.doi.org/10.2307/1957081>
- Gajdzik, B. (2008). Concentration on knowledge and change management at the metallurgical company. *Metallurgija*, 47(2), 142-144.
- Gilsing, V.A. & Lemmens, Ch. (2007). Strategic alliance networks and innovation: a deterministic and voluntaristic view combined. *Technology Analysis & Strategic Management*, 19(2), 227-249, <http://dx.doi.org/10.1080/09537320601168151>
- Goerzen, A. (2007). Alliance networks and firm performance: the impact of repeated partnerships. *Strategic Management Journal*, 28(5), 487-509, <http://dx.doi.org/10.1002/smj.588>
- Granboulalan J, Scotting B., De Smedt, S. & Van Hoey, M. (2008). Integrating steel giants: an interview with the ArcelorMittal postmerger manager. *The McKinsey Quarterly*, 2, 94-105.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 27, 109-122, <http://dx.doi.org/10.2307/2486994>
- Hamel, G. (1991). Competition for competence and interpartner learning within international strategic alliances. *Strategic Management Journal*, 12, 83-103, <http://dx.doi.org/10.1002/smj.4250120908>
- Hansen, M.T. (1999). The research-transfer problem: the role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly*, 44, 82-111, <http://dx.doi.org/10.2307/2667029>
- Hutzschenreuter, T. & Horstkotte, J. (2010). Knowledge transfer to partners: a firm level perspective. *Journal of Knowledge Management*, 14(3), 428-448, <http://dx.doi.org/10.1108/13673271011050148>

- Ingram, P. & Simons, T. (2002). The transfer of experience in groups of organizations: implications for performance and competition. *Management Science*, 48(12), 1517-1533, <http://dx.doi.org/10.1287/mnsc.48.12.1517.437>
- Johannessen, J. & Olsen, B. (2003). Knowledge management and sustainable competitive advantage: the impact of dynamic contextual training. *International Journal of Information Management*, 23, 277-289, [http://dx.doi.org/10.1016/S0268-4012\(03\)00050-1](http://dx.doi.org/10.1016/S0268-4012(03)00050-1)
- Klonoski, R. (2013). The case for case studies: deriving theory from evidence. *Journal of Business Case Studies*, 9(3), 261-266.
- Kok, J.A. (2004). Framework for managing knowledge in an enterprise to gain competitive advantage. *South African Journal of Information Management*, 6(4), 1-9, <http://dx.doi.org/10.4102/sajim.v6i4.351>
- Kotabe, M., Martin, X. & Domoto, H. (2003). Gaining from vertical partnerships: knowledge transfer, relationship duration and supplier performance improvement in the U.S. and Japanese automotive industries. *Strategic Management Journal*, 24(3), 293-316, <http://dx.doi.org/10.1002/smj.297>
- Kuiken, J. & Van der Sijde, P. (2010). Knowledge transfer and disseminative capacity: a review and propositions for further research on academic knowledge transfer. Available from <http://proceedings.utwente.nl/53/1/Kuiken.pdf>
- Lake, P. & Erwee, R. (2005). Knowledge exchange in a regional network. *International Journal of Organisational Behaviour*, 9(6), 642-658.
- Lee, C.Y., & Wu, F.C. (2010). Factors affecting knowledge transfer and absorptive capacity in multinational corporations, *The Journal of International Management Studies*, 5(2), 119–126.
- Lisiński, M., Sroka, W., Brzeziński, P., Jabłoński, A., & Stuglik, J. (2012). Application of modern management concepts by Polish companies - analysis of research results. *Organizacija*, 45(2), 41-49, <http://dx.doi.org/10.2478/v10051-012-0005-5>
- Lorenzoni, G. & Lipparini, A. (1999). The leveraging of inter-firm relationships as a distinctive organizational capability: a longitudinal study. *Strategic Management Journal*, 20(4), 317-338, [http://dx.doi.org/10.1002/\(SICI\)1097-0266\(199904\)20:4<317::AID-SMJ28>3.0.CO;2-3](http://dx.doi.org/10.1002/(SICI)1097-0266(199904)20:4<317::AID-SMJ28>3.0.CO;2-3)
- Marelli, A.F. (2007). Collecting data through case studies. *Performance Improvement*, 47(7), 39-44, <http://dx.doi.org/10.1002/pfi.148>
- Minbaeva, D.B. & Michailova, S. (2004). Knowledge transfer and expatriation in multinational corporations. The role of disseminative capacity. *Employee Relations*, 25(6), 663-679, <http://dx.doi.org/10.1108/01425450410562236>
- Mitchell, J.C. (1983). Case and situation analysis. *The Sociological Review*, 31(2), 187-211, <http://dx.doi.org/10.1111/j.1467-954X.1983.tb00387.x>
- Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review*, 11, 96-104.
- Parent, R., Roy, M. & Jacques, S. (2007). A systems-based dynamic knowledge transfer capacity model. *Journal of Knowledge Management*, 11(6), 81-93, <http://dx.doi.org/10.1108/13673270710832181>
- Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Piekkari, R., Welch, C. & Paavilainen, E. (2009). The case study as disciplinary convention: Evidence from international business journals. *Organizational Research Methods*, 12(3), 567-589, <http://dx.doi.org/10.1177/1094428108319905>
- Powell, W.W. (1998). Learning from collaboration: knowledge and networks in the biotechnology and pharmaceutical industries. *California Management Review*, 40(3), 228-240, <http://dx.doi.org/10.2307/41165952>
- Polanyi, M. (1966). *The tacit dimension*, Garden City: Doubleday & Co.
- Reagans, R. & McEvily, B. (2003). Network structure and knowledge transfer: the effects of cohesion and range. *Administrative Science Quarterly*, 48, 240-267, <http://dx.doi.org/10.2307/3556658>
- Richter, F.J. & Vettel, K. (1995). Successful joint ventures in Japan: transferring knowledge through organizational learning. *Long Range Planning*, 28(3), 37-45, [http://dx.doi.org/10.1016/0024-6301\(95\)00019-F](http://dx.doi.org/10.1016/0024-6301(95)00019-F)
- Smith, N.C. (1990). The case study: a useful research method for information management. *Journal of Information Technology*, 5, 123-13, <http://dx.doi.org/10.1057/jit.1990.30>
- Spender, J.C. & Grant, R.M. (1996). Knowledge and the firm: overview. *Strategic Management Journal*, 17, 5-9, <http://dx.doi.org/10.2307/2486987>
- Sroka, W. (2010a). Alliance networks: the case of multinational corporations. *Organizacija* 43(4), 165-172, <http://dx.doi.org/10.2478/v10051-010-0016-z>
- Sroka, W. (2012). Cooperative strategies and their benefits – theory vs. research results. *Management: Science and Education*, 1(1), 44-48.
- Sroka, W. (2010b). *Mergers and acquisitions or inter-organizational cooperation? Determinants of choice*, 29th International Conference on Organizational Science Development “People and Organization”, Portoroz, Slovenia, 24-26 March, pp. 1434-1441.
- Study on the competitiveness of the European Steel Sector within the framework contract of sectorial competitiveness studies – ENTR/06/054, Final report*, August 2008, Available at: http://ec.europa.eu/enterprise/sectors/metals-minerals/files/final_report_steel_en.pdf
- Szulanski, G. (1996). Exploring internal stickiness: impediments to the transfer of best practice within the firm. *Strategic Management Journal*, 17, 27-43, <http://dx.doi.org/10.2307/2486989>
- Tang, F. (2011). Knowledge transfer in intra-organization networks. *Systems Research and Behavioural Science*, 28(3), 270-282, <http://dx.doi.org/10.1002/sres.1074>
- Thomas, G. (2011). A typology for the case study in social science following a review of definition, discourse and structure. *Qualitative Inquiry*, 17(6), 511-521, <http://dx.doi.org/10.1177/1077800411409884>
- Tsai, W. (2001). Knowledge transfer in intraorganizational networks: effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, 44(5), 996-1004, <http://dx.doi.org/10.2307/3069443>
- Tsang, E.W.K. (2013). Case study methodology: causal explanation, contextualization, and theorizing. *Journal of International Management*, 19(2), 195-202, <http://dx.doi.org/10.1016/j.intman.2012.08.004>
- Uzzi, B. (1997). Social structure and competition in interfirm networks: the paradox of embeddedness, *Administrative Science Quarterly*, 42(1), 35-67, <http://dx.doi.org/10.2307/2393808>

- Welch, C., Piekkari, R., Plakoyiannaki, E. & Paavilainen-Mäntymäki, E. (2011). Theorising from case studies: towards a pluralist future for international business research. *Journal of International Business Studies*, 42(5), 740-762, <http://dx.doi.org/10.1057/jibs.2010.55>
- Wiehoczek, J. (2009). Foreign direct investment of Asian companies in Central and Eastern Europe as an element of expansion strategy on the European Union market. *Journal of Economics & Management*, 6, 188-215.
- Wynn, J., & Williams, C.K. (2012). Principles for conducting critical realist case study research in information systems. *MIS Quarterly*, 36(3), 787-810.
- Yin, R.K. (1994). *Case study research design and methods*, 2nd ed. Applied Social Research Methods Series, Volume 5, Thousand Oaks CA: Sage Publications.
- Yin, R.K. (1981). The case study crisis: some answers. *Administrative Science Quarterly*, 26, 58-65, <http://dx.doi.org/10.2307/2392599>
- Zahra, S. & George G. (2002). Absorptive capacity: a review, reconceptualization and extension. *Academy of Management Review*, 27(2), 185-203, <http://dx.doi.org/10.2307/4134351>

Włodzimierz Sroka specializes in theoretical and practical issues relating to the management and strategic management. He is the author of several scientific articles about strategic alliances, mergers and acquisitions, strategy, restructuring and alliance networks published both in Polish and international journals. His research activities mainly include cooperative strategies, and mergers and acquisitions. He holds his Ph.D., M.Sc. and B.Sc. degrees in Management and Marketing from the Karol Adamiecki University of Economics in Katowice, as well as D.Sc degree (habilitation) from the University of Zilina (Slovakia). Currently he is an Associate Professor and Vice Rector for

Science at the Academy of Business in Dąbrowa Górnicza (Poland). He was previously employed in different managerial positions in both the steel and machine industries.

Joanna Cygler: M.A (Economics), Ph.D. (Management) and Habilitation (Strategic Management) from the Warsaw School of Economics (SGH). Associate Professor (Institute of Management, Faculty of Management and Finance) at Warsaw School of Economics. Specialist of international business cooperation. Authoress of numerous scientific publications on strategic alliances, business cooperation and network relations published in various countries. Worked for the Chancellery of the President of Poland (special advisor), responsible for international economic initiatives of the President and cooperation with international organizations (e.g. OECD, WEF, UN). She also worked for the Agency for Foreign Investment in Poland, (Director, Research Department, responsible for international investment cooperation, coordinated the biggest foreign investment projects in Poland) and the Ministry of Economy (research projects). Coordinated many research projects financed by Polish and American (Fulbright research scholarship, University of Minnesota) scientific organizations.

Bożena Gajdzik specializes in theoretical and practical issues relating to the restructuring processes in manufacturing enterprises after transformation of economic system in Central European Countries. She is the author of several scientific articles and books. She specializes in restructuring of metallurgical enterprises in Poland and in other countries. She holds her Ph.D. degree in Economics from the Karol Adamiecki University of Economics in Katowice. Currently she is a lecturer (Assistant Professor) at the Silesian University of Technology in Gliwice (Poland).

Prenos znanja v intra-organizacijskih omrežjih: študija primera

Ozadje: V današnjem poslovnem okolju lahko podjetja vzdržujejo konkurenčen položaj le, če stalno generirajo znanje, razširjajo znanje znotraj organizacije in ga pretvarjajo v nove kompetence. Zmožnost prenosa znanja je eden od ključnih dejavnikov za izboljšanje konkurenčnega položaja podjetja. To velja še posebej v primeru sodelovanja med omrežji, saj le-ta predstavljajo odlično možnost, da se partnerji učijo eden od drugega.

Cilji: Cilj tega članka je analizirati proces prenosa znanja v intra-organizacijskih omrežjih.

Metode: Zaradi specifičnosti raziskovanega subjekta smo uporabili metodo študije primera. Da bi lahko izvedli poglobljeno analizo smo izbrali skupino različnih kriterijev pri čemer smo se opirali na teorijo, za katero verjamemo, da je pomembna za učinkovito upravljanje znanja v omrežjih, in te kriterije uporabili pri analizi situacije v skupini ArcelorMital.

Rezultati: Naša analiza je pokazala, da ArcelorMital skupina ustreza skoraj vsem kriterijem učinkovitega managementa znanja v intra-organizacijskih omrežjih. Nekatere izjeme so vsaj v določeni meri posledica zgodovinskih okoliščin, na primer procesa rasti, ki izhaja iz prevzemov, predvsem prevzemov podjetij na različnih stopnjah organizacijskega razvoja in različne organizacijske kulture.

Zaključek: Na osnovi teoretičnih izhodišč je podana podrobna analiza komponent managementa znanja v obravnavani korporaciji. Na osnovi naše študije je mogoče oblikovati hipoteze in jih preveriti na večji skupini podjetij z različnih sektorjev gospodarstva. Poglavitna omejitev naše študije je predvsem v samem pristopu.

Ključne besede: znanje, prenos znanja, management znanja, omrežje, študija primera.

DOI: 10.2478/orga-2014-0004

Work-life Balance by Area, Actual Situation and Expectations – the Overlapping Opinions of Employers and Employees in Slovenia

Tatjana Kozjek, Nina Tomažević, Janez Stare

University of Ljubljana, Faculty of Administration, Gosarjeva Street 5, 1000 Ljubljana, Slovenia
tatjana.kozjek@fu.uni-lj.si, nina.tomazevic@fu.uni-lj.si, janez.stare@fu.uni-lj.si

Background: The question of work-life balance (WLB) is an area where increasing attention is being paid nowadays. States, organisations and employees all have responsibility and a role to play in WLB. This article presents the important areas of the WLB by key players in this field.

Purpose: The purpose of the research was to compare and analyse the differences between the actual situation and the expectations of employers and employees with regard to specific areas of WLB in Slovenia.

Methodology: Data was gathered using the Computer Assisted Web Interview (CAWI) method. In the first part of the research project, employers across all sectors of the economy in Slovenia were questioned and in second part focussed on employees. In order to verify the areas in which employers and employees agree and those in which there are differences in perception, multidimensional scaling (MDS) was used.

Results: The results of our research show that Slovenian organisations must pay more attention to flexible working time, the employees' ability to take time off to care for family members, time and stress management workshops and paid leave for parents on a child's first day of school.

Conclusion: A significant role in WLB is played by organisations. The incorporation of WLB strategies into the strategic and financial planning of an organisation can, in fact, have positive business, economic and social effects. Employees have to express their expectations and needs, which is the only way that employers can be made aware of their problems and help with WLB. State responsibility is to encourage all social partners to shape the living environment in which employees' can achieve a good WLB with an emphasis on gender equality.

Keywords: work-life balance, the state, employer, employee, multidimensional scaling (MDS)

1 Introduction

Finding a balance between different spheres of life or work-life balance (WLB) requires a variety of measures and good cooperation between employees, organisations, schools, nursery schools, trade unions, local communities and the state. All the stakeholders need to be aware of the existence of the problem of WLB and of their responsibilities for addressing it.

The purpose of the research presented in this article was to compare and analyse the differences between the actual situation and the expectations of employers and employees with regard to specific areas of WLB in Slovenia. It was part of the research project entitled Improving the Working Environment with Innovative Solutions (INODEL), which was part-financed by the European Union from the European Social Fund (ESF). Data was gathered using the Computer Assisted Web Interview (CAWI) method. The INODEL

research project was carried out in two parts. In the first part of the research, a link to an online questionnaire was e-mailed to random selected organisations across all the sectors of the economy in Slovenia that had a published e-mail address either in business directories or on a company website. In the second part of the research, private and public sector employees were invited to complete the online questionnaire. A link to the online questionnaire was e-mailed to random selected organisational personnel departments across all the sectors of the economy in Slovenia. We asked them to forward our e-mail to their employees. The questions related to WLB that employees answered were identical to the employers' questions.

The research examined the following research questions:

- Do employers perceive that the WLB of employees is poor in some areas of working life?
- Do employees perceive that their WLB is poor in some areas of working life?
- Is there a discrepancy in the perception of employees' WLB in the investigated areas of working life between employers and employees?
- In order to verify the areas where employers and employees agree and those where there are differences in perception, multidimensional scaling (MDS) was used.

The first part of this article represents important areas by key players (state, organizations and employers) in the field of WLB. In the second part the results of a comparison and the differences between the actual situation and the expectations of employers and employees with regard to individual areas of WLB in Slovenia are shown.

2 Important areas and measures by key players in the field of WLB

WLB is about seeking the most effective possible combination of working life and private obligations or aspirations (Littig, 2008). WLB, situated within a capabilities framework, is a lens through which to view WLB alternatives, quality of life and wellbeing. It is a framework for analysing access to rights and policies for WLB and the possibilities of making claims for them (Hobson, 2014).

Given the increased participation of women in the labour force and in the number of dual-earner families, work-life concerns have become an important public policy issue (Bonet et al., 2013). Den Dulk et al. (2014) write that individual capabilities to find a satisfactory WLB are shaped at various levels of society: the state, the workplace and the household. Fahlen (2014) states that institutional factors (rights and laws) and societal factors (gender norms) are two key components for understanding an individual's capabilities for WLB.

Significant differences are developing between countries in terms of WLB. Vandell and Shumow (1999), OECD (2007), Hong (2009), Fernández Cordón (2009), Den Dulk and Doorne-Huiskes (2010) and Den Dulk et al. (2014) describe the following main policy instruments in WLB: childcare, working time, tax/financial aid and parental leave policies, public services, allowances to cover childcare costs, work and family incentives and broad social support for children and parents. Research by the OECD (2008), COFACE (2008), Fernández Cordón (2009), Thévenon (2008), Wharton (2012) and Hobson (2014) point out that the importance of WLB has proved significant in family planning, the temporary or permanent exit of parents from the labour market, childcare (for pre-school children, in the case of illness, the lack of synchronisation of working and school hours, during school holidays), caring for elderly members and quality of life.

Fagnani (2010) performed a comparative analysis of fertility levels in six countries (France, Netherlands, Portugal, Sweden and the UK) and found out that where family-friendly public policy has had a positive impact on fertility levels, the common denominator has been the availability of affordable, high quality childcare, along with legal provisions regulating work leave and work schedules related to children. Begall and Mills (2011) examine the link between employment and fertility using data from 23 countries from the 2004/5 European Social Survey (ESS) for women. They found out that labour force experience, working hours, the educational attainment of a woman and her partner, the prevalence of part-time work, etc. are strong predictors of the intention to become a mother.

Hobson (2014) writes that distinctions between work and non-work have become less clear in the case of care. According to Fagan and Walthery (2014), in most countries the main reason women take part-time employment is that it is one way to balance the time demands of employment with the responsibilities of housework and providing care for children and elders. Warren et al. (2009) researched innovative social policies drawn from the European arena (universal systems of childcare, a shorter working week and shared parental leave) asking about their relevance to the WLB of low-waged coupled mothers in England. They found out that key problems persist concerning access to affordable, reliable childcare. Poorly qualified women are more likely to stop paid work when they have children, and return to marginalized, low paid jobs with short part-time hours. Fox et al. (2009) researched how fathers in the EU managed their WLB, and how alternative social policy strategies would fit with their practices and ideals. He found out that social policies supporting men's care (particularly parental leave dedicated to fathers) are needed to enhance gender equality and work family balance for men and women.

Albanese and Farr (2012) researched the complex task of finding and managing formal and informal non-parental child care in rural and semi-rural communities in two policy

jurisdictions (Ontario and Quebec) in the Ottawa Valley and discovered that finding and managing child care has a lot to do with gendered perceptions of control and powerlessness over social circumstances related to geography and government policies, as well as the changing and at times precarious economic/labour market circumstances. Vandell and Shumow (1999) state that families in America must continue to arrange care for their school-age children, because the school day is considerably shorter than an adult's full-time workday. Child care is important between school holidays, teacher in-service days and summer vacations as well. Some parents are able to fill this time with formal after-school programs; others patch together care by shifting work schedules, hiring sitters, relatives or neighbours, and setting up activities such as piano lessons and scouts on different days; some children take care of themselves.

The European Economic and Social Committee (2007) encourages social partners to launch regional-level and local-level initiatives, bringing together committed players (businesses, works councils, parents' groups, faith-based communities, sports clubs and local representatives) in order to shape the living environment in such a way as to secure the best possible WLB. COFACE (2008) and Hinkin and Tracy (2010) also emphasise that:

- leave schemes (encompassing security aspects and flexibility) meeting the wide variety of family needs must be enshrined in legislation,
- part-time work must be upgraded (payment, social rights, status on the labour market),
- flexible working time arrangements must be further promoted,
- the times of public services must be coordinated (pre-school childcare provision, out-of-school childcare provision (including during school holidays and while a child is sick), school meals, home care services, offices),
- gender equality must be taken into account (the changing roles of men and women).

The findings of the OECD (2008) indicate that a significant role in the WLB is played by organisations (employers). According to Den Dulk et al. (2014), organisations can influence the capabilities and freedom of employees to balance work/life arrangements. They write that work/life policy needs to be integrated into an organizational culture that is concerned with the responsibilities of employees outside of work. Wharton (2012) writes that organizations play a critical role in shaping employees' work-family experiences. Changing the workplace is central to improving the quality of people's work-family experience. Working conditions and workplace policies can ease or exacerbate people's efforts to handle their home and work responsibilities. According to Hobson (2014), organisations have become a mediator in granting or denying claims, an actor initiating new policies in flexible working schemes, and

even a place where information is disseminated or withheld. Working time policies can lead to enhanced capabilities for WLB. The possibility of organizing one's working time (flexibility) can be a capability for participating in earning and caring as well.

Wharton (2012) states that in general, larger organizations are more likely to have the resources to offer work-family policies than those with fewer employees. Offering family-friendly policies helps these companies signal their concern for employees and their families, and these signals are good for recruiting top employees. Kanjuo Mrčela and Černigoj Sadar (2014) researched the capabilities for WLB in the service sector and the IT industry in Slovenia and found out that the interconnectedness of the structural, firm level and individual characteristics (gender, skills, education, professional or nonprofessional status, support networks (family, parents and colleagues)) describe the employees' capabilities to make claims for WLB.

ILO (2004a), the European Foundation for the Improvement of Living and Working Conditions (2007), the European Economic and Social Committee (2007) and Hong (2009) list the following family-friendly organisational policy measures:

- the legal security of an employment contract,
- long-term and non-discriminatory career plans,
- the introduction of working time arrangements (e.g. employees plan their working day, part-time work, flexible start and end times, shorter working hours/days, tele-working, a compressed working week, job sharing, time-banking),
- schemes giving staff the opportunity to keep in touch with work during parental leave,
- assistance in the organisation of childcare (e.g. assistance in finding and paying for childcare, the organisation of childcare),
- special leave (e.g. paid leave for parents on a child's first day of school),
- support in caring for elderly relatives or other relatives who need care.

Hinkin and Tracy (2010) and Arbon et al. (2012) write that proactive scheduling appears to be popular with employees. Their primary approaches to workplace flexibility are job sharing, a compressed work week, and flexitime. Hashiguchi (2010), Buehler and O'Brien (2011) mention working at home and switching full-time to part-time hours. Den Dulk et al. (2014) write that flexible working arrangements allow employees to adapt working hours or place of work to responsibilities outside work, for instance to work from home in the case of a sick child or other family member. Galea et al. (2013) researched how employees experience the influence of flexible working hours on their WLB. The main finding is that working with flexible working hours, if supported by the management and fitting in with the working culture, is highly appreciated for both private

and work-related reasons. The more family responsibilities the respondents have, the more they tend to perceive flexible working hours as a necessity rather than an extra benefit.

Kelly et al. (2011) studied a schedule flexibility initiative at Best Buy Co. Inc. and discovered that white-collar workers who participated in the initiative reported lower levels of work-life conflict and higher levels of WLB than comparable employees, which lends support to those who believe that changes in working conditions (including those made possible by an employee's use of a workplace policy) can be effective in improving employees' work and family lives.

Bonet et al. (2013) used data on women's work and fertility histories from the Spanish Continuous Sample of Working Histories and analysed whether more women changed temporary contracts to self-employment upon motherhood than those with permanent contracts. They found out that women employed with a temporary contract are much more likely to switch to self-employment upon motherhood than women with a permanent contract. They interpret the result as evidence that temporary working women have a greater need than permanent ones to look for an alternative employment that allows them better WLB.

The ILO (2004) underlines the fact that WLB strategies incorporate into the strategic and financial planning of an organisation have positive effects on business, economic and social areas. Kelly et al. (2008) write that an understanding of how organizations respond to work-family issues is also important due to the impact of these responses on employees' work attitudes and behaviour and family life, as well as their impact on the organization's own reputation and success. Helpert (2005), Davis and Kalleberg (2006),

Van Dyne et al. (2007), Kelly et al. (2008) and Kossek and Michel (2010) write that flexibility has a positive impact on WLB, motivation, job satisfaction, productivity and retaining the best employees, as well as better quality services and products, increased commitment to the organization and lower costs; all of which have a positive impact on efficiency.

3 Methodology

Research into WLB in Slovenia was performed by the Faculty of Administration, University of Ljubljana. It was part of the research project entitled Improving the Working Environment with Innovative Solutions (INODEL), which was part-financed by the European Union from the European Social Fund (ESF). The purpose of this research was to compare and analyse differences between the actual situation and the expectations of employers and employees with regard to individual areas of WLB in Slovenia.

Data was gathered using the Computer Assisted Web Interview (CAWI) method. The INODEL research project was carried out in two parts. In the first part of the research (February 2011), a questionnaire was e-mailed to $n = 18,175$ randomly selected organisations across all sectors of the economy in Slovenia with a published e-mail address either in business directories or on a company website. The response rate was 5.6%; a total of $n = 1,009$ organisations responded. The representatives of the organisations were, in the largest number of cases, human resources officers (34.9%), followed by directors and/or CEOs (25.3%), human resources managers (17.4%) and secretaries/assis-

Table 1: First research - sample characteristics and population comparison (Statistical Office of the Republic of Slovenia (SORS), 2009)

Organization	Population	Sample	χ^2	p
Type				
Limited liability and public	247037 (91.6%)	920 (91.3%)	0.14	0.709
Other	22521 (8.4%)	88 (8.7%)		
Size				
≤ 250	486804 (76.6%)	975 (96.8%)	227.96	< 0.001
> 250	148446 (23.4%)	32 (3.2%)		
Region				
Central	46599 (34%)	360 (35.7%)	4.06	0.255
Podravska	19042 (13.9%)	138 (13.7%)		
Savinjska	14784 (10.8%)	121 (12%)		
Other	56618 (41.3%)	389 (38.6%)		

Table 2: Second research - sample characteristics and population comparison (Labour force, SORS, 2011)

Characteristic	Population	Sample	χ^2	p
Gender				
Male	456823 (55.8%)	412 (53.2%)	1.94	0.16
Female	362152 (44.2%)	362 (46.8%)		
Education				
Primary	123631 (15.2%)	3 (0.4%)	804.1	<0.001
Secondary	477356 (58.6%)	225 (29.1%)		
Postsecondary or higher	213789 (26.2%)	546 (70.5%)		
Age				
< 25	35307 (4.3%)	10 (1.3%)	96.53	<0.001
26 do 30	97176 (11.9%)	47 (6.1%)		
31 do 35	128876 (15.7%)	107 (13.8%)		
36 do 40	126973 (15.5%)	99 (12.8%)		
41 do 45	126625 (15.5%)	180 (23.3%)		
46 do 50	129007 (15.8%)	173 (22.4%)		
51 do 55	109204 (13.3%)	104 (13.4%)		
> 55	65807 (8%)	54 (7%)		

tants (13.1%). The sample included 91.3 % limited liability and public companies, 96.8 % companies with 250 or fewer employees and 35.7% companies from the Central Slovenia region. Among the companies in the sample, the share of large companies, i.e. companies with more than 250 employees, was too small compared to the population. The structure of the organisations by region and legal status was similar to the structure of the statistical population (Table 1).

In the second part of the research (June 2011), employees were invited to complete an online questionnaire. A link to the online questionnaire was e-mailed to random selected organisational personnel departments across all sectors of the economy in Slovenia. We asked them to forward our e-mail to their employees. The questions related to WLB that the employees answered were identical to employers' questions. A total of $n = 774$ respondents completed the questionnaire. The sample included 53.2 % women, 29.4 % respondents with secondary education and 27 % respondents with post-secondary education or higher. 21.2 % of the respondents were under 36 years old. In comparison to the economically active population of Slovenia, the sample included too many people with at least a post-secondary qualification and too few people under the age of 36 (Table 2).

The research examined the following research questions:

- Research question 1: Do employers perceive that the WLB of employees is poor in some areas of working life?

- Research question 2: Do employees perceive that their WLB is poor in some areas of working life?
- Research question 3: Is there a discrepancy in the perception of employees' WLB in the investigated areas of working life between employers and employees?

The WLB of employees in the following areas of working life was measured on a 5-point scale (1 = very poor; 5 = excellent):

- flexible working time,
- compressed working week,
- half- or part-time work,
- working from home,
- non-discrimination against women, pregnant women, parents and other groups of employees with greater needs for a better WLB,
- childcare provision for pre-school children and out-of-school care for school-age children (e.g. school holidays, national holidays),
- paid leave for parents on a child's first day of school,
- outings or social gatherings for employees' families,
- the ability to take time off to care for other/elderly family members or a partner,
- child supervision to and from school (e.g. escort on the bus),
- workshops on time management and stress management (to manage employers' and employees' time and stress).

The WLB of each area of working life was assessed and the mean (median; standard deviation) assessment was calculated. As the distribution of answers for each area was non-normal, the differences in the assessment between areas with a similar mean (median) assessment were examined using the Wilcoxon signed-ranked test. Where the difference was statistically significant, a different rank was assigned to each area otherwise areas were given the same rank. Ranks were assigned in such a way that the area with the highest mean and median assessment of WLB was given a rank of 1. Low ranks thus indicated a good situation in the area, while high ranks indicated a poor situation. The same procedure was used in the *assessment of expectations* by areas.

In the assessment of working areas, gender differences and differences between respondents with or without pre-school or school age children were tested using the Mann-Whitney U test, while differences between age groups were tested using the Kruskal-Wallis test. All the tests were carried out at the $\alpha = 0.05$ significance level.

A direct comparison of employees' and employers' answers was not straightforward because sampling was done independently for the first and second part of the research and the sample did not include employees and employers from the same companies. Still, comparison of the answers should be possible if the two groups were comparable regarding the control variable. The control variable was a general assessment of the WLB of employees. The answers from companies with a poor general WLB for their employees were compared to the answers of employees who assessed their general WLB as poor. In order to determine the working areas in which employers and employees agree regarding WLB and those in which there are differences in

perception, multidimensional scaling (MDS) was used. The items in the research included areas of work-life balance in terms of both actual situation and expectations. The difference between them was calculated in terms of the similarity of the assessment given by employers and employees. A good aspect of MDS is the reduction of a multidimensional space into a manageable number of dimensions, which throws the clearest light on the variance of variables.

4 Results of the research

The left-hand side of Table 3 outlines the mean (median; standard deviation) WLB of employees as perceived by employers in each of the investigated working areas, the tested pair of areas with a similar mean assessment, the result of the Wilcoxon signed-ranked test and assigned rank. The right-hand side of the table gives a similar outline for expectations.

In the opinion of *employers*, WLB is best in the area of non-discrimination against groups of employees. This area is followed by flexible working time, a compressed working week and outings/social gatherings for employees' families. In their opinion, the poorest WLB is to be observed in the provision of childcare facilities for pre-school children and out-of-school childcare facilities for school-age children (e.g. during holidays), but employees' expectations of balance in this area are lower in the opinion of the employers as well.

Areas by assigned ranks regarding the situation and expectations as observed by employers are showed in Fig. 1. The upper right quadrant shows areas where, in the opin-

Table 3: Average assessments (median; standard deviation) of the situation and expectations by areas and attributed rank (R), arranged by R for expectations – employers

AREAS	SITUATION	Pair	Z	R	EXPECTATIONS	Pair	Z	R
1 Flexible WT	3.45 (4; 1.2)	1;5	-2.1*	3	3.94 (4; 0.77)	1;2	-2.3*	1
2 Non-discrimination	3.64 (3; 0.92)	2;6	-2.7**	1	3.86 (4; 0.79)	2;3	-3.0**	2
3 Compressed WW	3.46 (4; 1.24)	3;1	-0.3	3	3.73 (4; 0.93)	3;4	-0.8	4.5
4 Child supervision TFS	2.51 (3; 0.82)	4;7	-5.3*	6	3.71 (3; 0.88)	4;5	-0.6	4.5
5 Part-time work	3.31 (4; 1.4)	5;4	-12.6**	5	3.68 (3; 0.89)	5;6	-0.04	4.5
6 Family gatherings	3.49 (4; 1.13)	6;3	-0.5	3	3.69 (4; 0.7)	6;7	-3.6**	4.5
7 Working from home	2.36 (2; 0.77)	7;11	-6.9**	7	3.49 (3; 1.14)	7;8	-2.4*	7
8 Paid leave FTS	1.48 (1; 0.67)	8;9	-5.4**	10	3.4 (3; 0.51)	8;9	-15.4**	8
9 Childcare during work	1.34 (1; 0.48)			11	3.08 (3; 0.27)	9;10	-1.7	10
10 SM workshops	1.86 (2; 0.94)	10;8	-9.9**	9	3.03 (3; 0.87)	10;11	-1.3	10
11 Help to take care of FM	2.09 (2; 0.86)	11;10	-5.9**	8	2.98 (3; 0.83)			10

Notes: WT = working time; WW = working week; FTS = first day of school; FM = family members; SM = stress management; TFS = to and from school; * $p < 0.05$; ** $p < 0.01$

ion of employers, the situation is good and expectations are high, while the lower left quadrant shows areas where the situation is poor and expectations are low. The areas in the upper left and lower right quadrant are areas where there is a greater discrepancy between the actual situation and expectations.

Areas where, in employers' opinion, the situation is good and expectations are high are flexible working time, non-discrimination against groups of employees with a greater need for WLB, outings and social gatherings for employees' families, and half-time or part-time work. The situation is poor regarding paid leave for parents on a child's first day of school, working from home, workshops on time management and stress management, the ability to take time off to care for family members, and the provision of childcare facilities for pre-school and school-age children, but these are areas where, in the employers' opinion, the expectations of employees are also poor. In all the listed working areas form the upper right and lower left quadrant, in the opinion of employers, the situation reflects the expectations of employees and therefore no special attention or time investment in improvement in these areas is needed. The only discrepancy between the situation and the expectations, in the opinion of employers, exists regarding child

supervision to and from school. This is the only area where the situation is poor while expectations are high.

In the opinion of *employees*, WLB is best in the area of non-discrimination against groups of employees. This area is followed by half-time or part-time work. The following areas received equally high assessments: flexible working time, working from home, and outings/social gatherings for employees. The worst situation, in the opinion of employees, is paid leave for parents on a child's first day of school. The provision of child supervision to and from school is also very poor. Employees' expectations are highest regarding the organisation of childcare for pre-school children and out-of-school childcare for school-age children during school holidays. This is followed by a whole group of areas where expectations regarding balance are equally strong or high. These are the areas of non-discrimination against groups of employees, paid leave for parents on a child's first day of school, outings/social gatherings for employees' families, the ability to take time off to care for other family members, child supervision to and from school and workshops on time management and stress management. Expectations are lowest regarding flexible working time and working from home. These are also areas that, in the opinion of employees, are relatively well regulated. The discrepancy

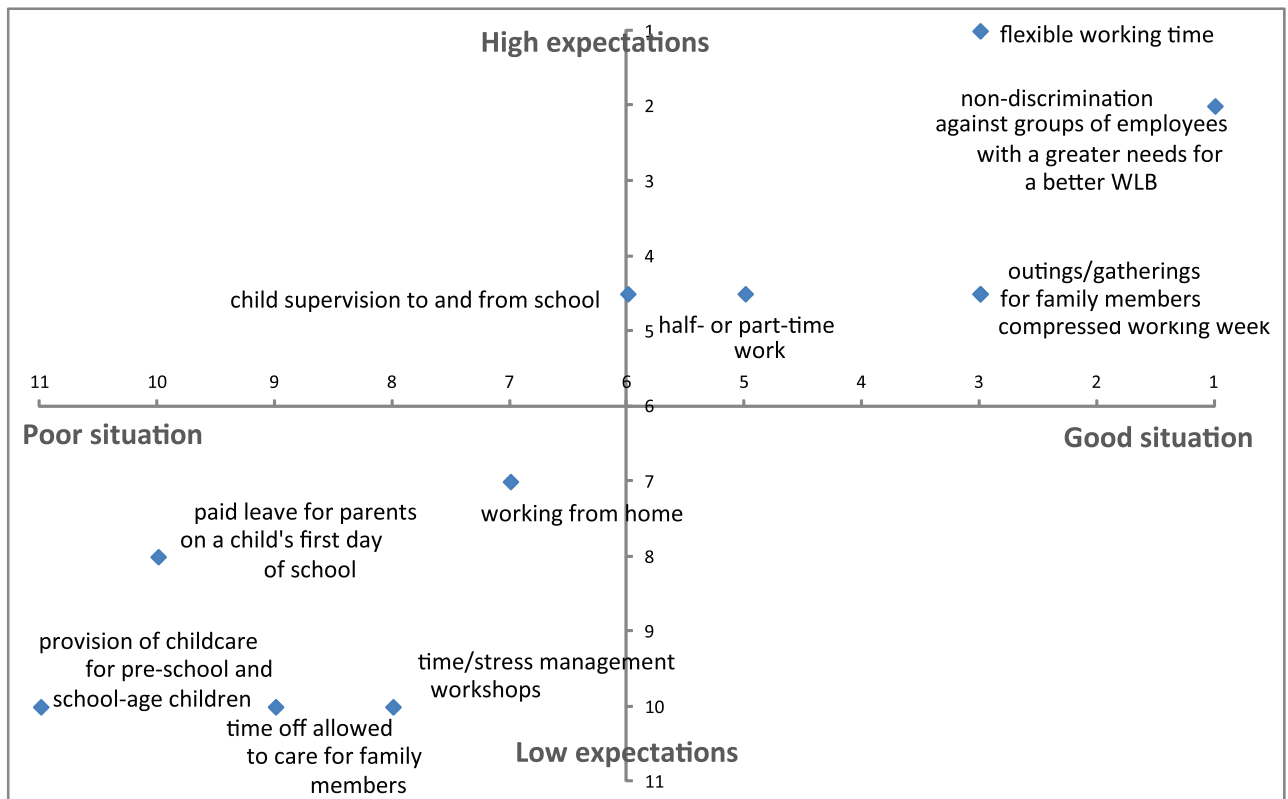


Fig. 1: Ranks of areas in terms of the median assessment of the actual situation and expectations – employers

Table 4: Average assessments (median; standard deviation) of the situation and expectations by areas and attributed rank (R), arranged by R for expectations – employees

AREAS	SITUATION	Pair	Z	R	EXPECTATIONS	Pair	Z	R
1 Childcare	2.5 (3; 0.81)	1;7	-3.8**	6.5	4.50 (5; 0.5)	1;2	-11.5**	1
2 Family gatherings	2.89 (3; 0.88)	2;10	-1.9	4	4.04 (4; 0.82)	2;3	-0.9	4.5
3 Non-discrimination	3.69 (4; 0.59)	3;9	-13.8**	1	4.02 (4; 0.83)	3;4	-0.2	4.5
4 SM workshops	2.05 (2; 1.19)	4;5	-7.6**	9	4.01 (4; 0.83)	4;5	-1.3	4.5
5 Child supervision TFS	1.52 (1; 0.83)	5;6	-3.7**	10	3.96 (4; 0.82)	5;6	-0.04	4.5
6 Paid leave FTS	1.44 (1; 0.62)			11	3.95 (4; 0.79)	6;7	-0.2	4.5
7 Help to take care of FM	2.44 (2; 0.89)	7;4	-9.1**	8	3.94 (4; 0.82)	7;8	-14.7**	4.5
8 Compressed WW	2.57 (2; 1.2)	8;1	-0,4	6.5	2.93 (3; 1.27)	8;9	-2.2*	8
9 Part-time work	3.07 (3; 0.96)	9;2	-3.5**	2	2.77 (3; 1.25)	9;10	-3.6**	9
10 Flexible working time	2.79 (3; 0.95)	10;11	-1.7	4	2.55 (3; 1.2)	10;11	-0.7	10.5
11 Working from home	2.68 (3; 1.07)	11;8	-2.1*	4	2.47 (2; 1.21)			10.5

Notes: WT = working time; WW = working week; FTS = first day of school; FM = family members; SM = stress management; TFS = to and from school; * p < 0.05; ** p < 0.01

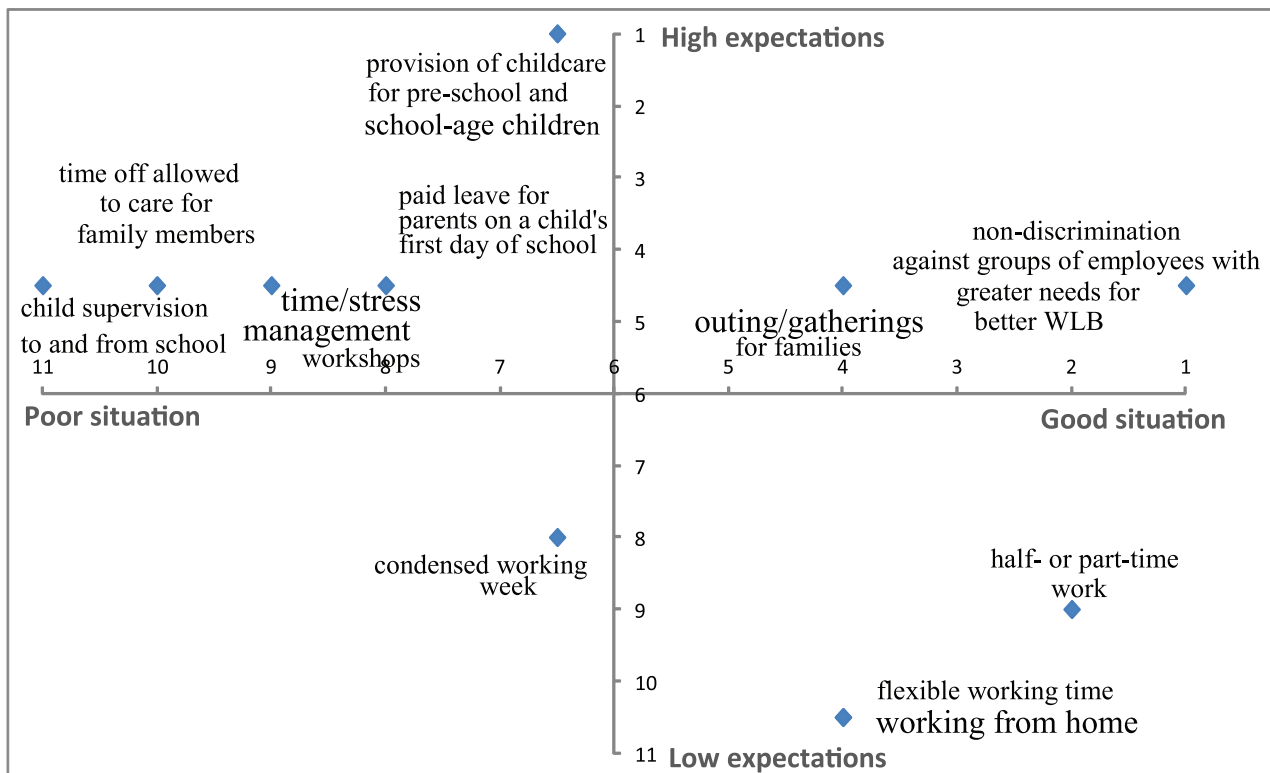


Fig. 2: Ranks of areas in terms of the median assessment of the actual situation and expectations – employees

between the current situation and employee expectations is shown in Fig. 2.

In the opinion of employees, the discrepancy between the situation and expectation exists in several working areas. The balance is poor but the expectation of balance is high in the following areas:

- the ability to take time off to care for elderly parents, a partner and other family members,
- child supervision to and from school,
- paid leave for parents on a child's first day of school,
- the provision of childcare for pre-school children and out-of-school childcare for school-age children during holidays, and
- workshops on time management and stress management.

Gender differences are present in the area of child supervision to and from school ($U = 56038$; $p = 0.037$), paid leave for parents on a child's first day of school ($U = 49430.5$; $p = 0.026$) and stress management workshops (58227 ; $p = 0.01$). Men perceive their WLB regarding child supervision to and from school and paid absence on a child's first day of school as poorer than women, while

expectations of balance in these two areas are equally high in both genders. In the current situation, women perceive that companies organize stress management workshops to a less satisfactory extent than men, while expectations are high in both genders. Expectations regarding stress management workshops are higher for employees without children or with older children in comparison to employees with preschool and primary school age children ($U = 54423.5$; $p = 0.03$). No age differences were found.

The actual situation is better, in comparison to expectations, in the field of flexible working time, working from home and the possibility of half-time or part-time work. If the situation in these fields was worse, expectations would perhaps be different as well. It is expected that in areas that are well regulated, employees cannot sense a discrepancy and consequently have no expectations for improvement.

To be able to compare the answers of employers and employees, only those employers who considered the general WLB of their employees to be poor and only employees who stated that their WLB is poor were selected for analysis. It is reasonable to expect employers and employees with a poor WLB to have a similar perception of the situation in

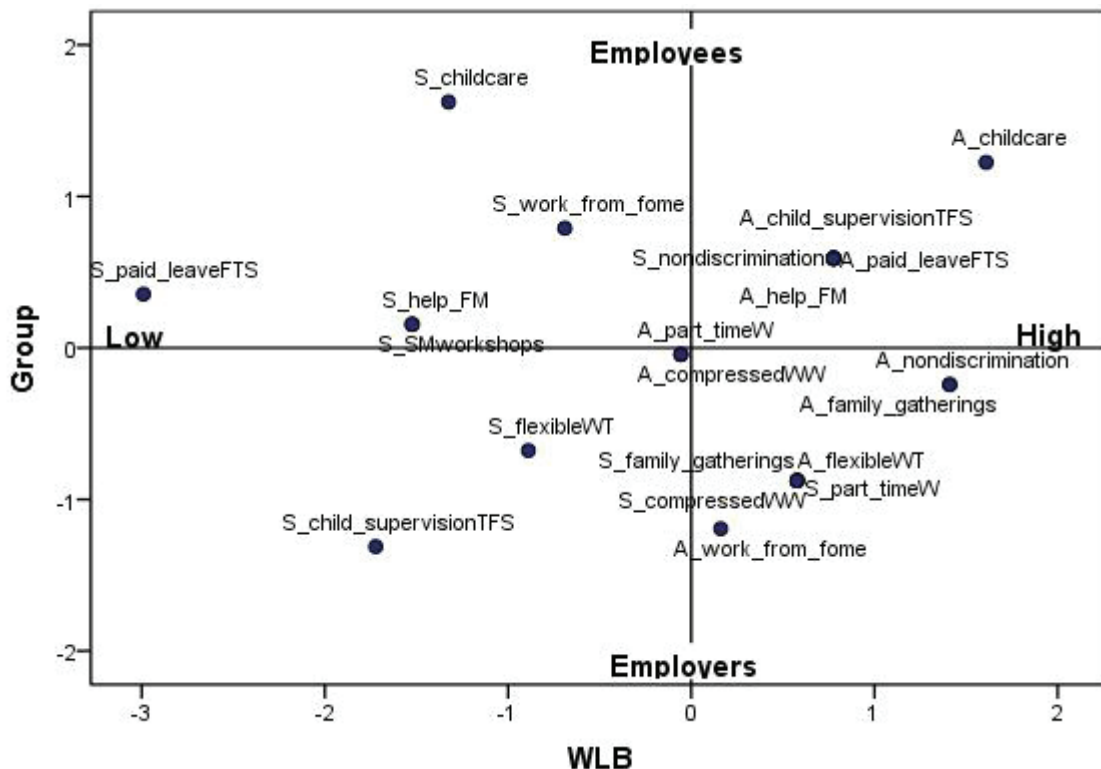


Fig. 3: The similarity between assessments of situations and expectations by areas

Notes: S – situation; A – expectations; WT = working time; WW = working week; FTS = first day of school; FM = family members; SM = stress management; TFS = to and from school; W = work.

different areas, and therefore that any differences are the consequence of poor communication between them.

Using MDS, all the variability was fully clarified in two dimensions. The first dimension (the x axis in Fig. 3) relates to the assessment of work-life balance. The areas, situations and expectations that received lower scores are on the left-hand side of Fig. 3, while those with better scores are on the right-hand side. The second dimension (the y axis) divides the two groups studied, i.e. employers and employees. Areas in the upper half of the figure are rated higher by employees, while those in the lower half are rated higher by employers. This means that although an area may be generally poorly rated and in the left half of Fig. 3, one group might still rate it higher than the other.

The actual situation in the various areas is for the most part rated lower than expectations, with a few exceptions. The latter include non-discrimination against groups of employees, social gatherings for employees' families, a compressed working week and half-time work. The last three areas were given a higher rating by employers, while the first was rated higher by employees. Expectations for a compressed working week and half-time work are generally less strongly expressed by the two groups, while expectations in terms of non-discrimination against groups of employees with a greater need for WLB and the desire for social gatherings for employees' families are high. The perception of the areas mentioned is sufficiently well-balanced both between the two groups and from the point of view of the overlap of assessments of the situation and expectations. These areas are therefore unproblematic and do not require significant attention.

Areas where the perception of the two groups is broadly consistent but that require more attention are: the ability to take time off to care for family members, time and stress management workshops and paid leave for parents on a child's first day of school. The situation in all these areas is poor, while expectations are high, with both employers and employees aware of this to a similar extent.

A significant discrepancy between the views of employers and employees can be observed in the case of child supervision to and from school, working from home, the provision of childcare for pre-school children and school-age children, and flexible working time. Employers consider child supervision to and from school to be better regulated than employees do. At the same time, employees' expectations of balance in this area are high. It should therefore be pointed out to employers that more attention could be devoted to this area.

Working from home is an area that employers consider to be poorly regulated and deserving of their attention, since they believe that employees have specific expectations with regard to the regulation of this area. In fact, however, this area is less important from the point of view of employees.

Employers believe that the provision of childcare for pre-school children and out-of-school care for school-age

children during school holidays is more problematic than employees do. At the same time, however, balance in this area appears more important to employees than it does to employers. Employers are therefore unaware of the expectations of employees in this area to a considerable extent.

Flexible working time is an area for which the assessment of the situation on the part of employees is lower than the assessment of employers. At the same time, employers believe the expectations of balance in this area are higher than that expressed by employees. This is actually an area that does not require particular attention from employers.

5 Discussion and conclusion

WLB demands various measures and the cooperation of all stakeholders – employees, organisations, schools, nursery schools, trade unions, local communities and the state. To this end, developed countries have developed various models of solutions. These countries place gender equality in childcare and caring for the elderly in the foreground, while at the same time implementing a range of policies tied to public services, parental leave, childcare, flexible work and working time arrangements, taxation and financial support.

Research to date in the field of WLB (e.g. Albertsen (2007); Joyce et al. (2010); Kossek, Michel (2010); Hobson (2014), has shown that organisations are devoting particular attention to the introduction of innovative working time models, employee participation in decisions on the quantity and location of work, support in the organisation of childcare, support in the provision of care for elderly relatives or relatives in need of care and quality of life.

Employees must express their expectations and needs, since otherwise they cannot expect employers or the state to resolve matters for them on their own initiative.

The research in this article draws on compared and identified differences between the actual situation and the expectations of employers and employees for individual areas of WLB in Slovenia. A direct comparison of the employees' and employers' answers was not straightforward because sampling was performed independently for the first and second part of the research and the sample did not include employees and employers of the same companies. Still, comparison of answers should be possible if the two groups were comparable regarding the control variable. The control variable was a general assessment of the WLB of employees. The answers from companies with a poor general WLB of their employees were compared to the answers of employees who assessed their general WLB as poor.

It was found that, in the opinion of the employers, WLB is best in the area of non-discrimination against groups of employees. This area is followed by flexible working time, a compressed working week and outings/social gatherings for employees' families. In their opinion, the poorest WLB is to be observed in the provision of childcare facilities for

pre-school children and out-of-school childcare facilities for school-age children (e.g. during holidays).

Areas where, in the employers' opinion, the situation is good and expectations are high are:

- flexible working time,
- non-discrimination against groups of employees with a greater need for WLB,
- outings and social gatherings for employees' families,
- half-time or part-time work.

The situation is poor regarding:

- paid leave for parents on a child's first day of school,
- working from home,
- workshops on time management and stress management,
- the ability to take time off to care for family members,
- the provision of childcare facilities for pre-school children and school-age children.

These are the areas regarding which where, in the employers' opinion, the expectations of employees are poor as well, so therefore no special attention or time investment in improvement in these areas is needed. The only discrepancy between the situation and expectations in the opinion of the employers is in the area of child supervision to and from school. This is the only area where the situation is poor while the expectations are high.

In the opinion of the employees, WLB is best in the area of non-discrimination against groups of employees. This area is followed by half-time or part-time work. The following areas received equally high assessments:

- flexible working time,
- working from home,
- outings/social gatherings for employees.

The worst situation, in the opinion of the employees, involves paid leave for parents on a child's first day of school. The provision of child supervision to and from school is also very poor. Employees' expectations are the highest regarding the organisation of childcare for pre-school children and out-of-school childcare for school-age children during school holidays.

Areas where expectations regarding balance are equally strong or high are:

- non-discrimination against groups of employees,
- paid leave for parents on a child's first day of school,
- outings/social gatherings for employees' families,
- the ability to take time off to care for other family members,
- child supervision to and from school,
- workshops on time management and stress management.

The expectations are lowest regarding flexible working time and working from home. These are also areas which, in the opinion of employees, are relatively well regulated.

In the opinion of employees, the discrepancy between the situation and the expectation exists in several working areas. The balance is poor but the expectation of balance is high in the following areas:

- the ability to take time off to care for elderly parents, a partner and other family members,
- child supervision to and from school,
- paid leave for parents on a child's first day of school,
- the provision of childcare for pre-school children and out-of-school childcare for school-age children during holidays, and
- workshops on time management and stress management.

Gender differences are present in the area of child supervision to and from school, paid leave for parents on a child's first day of school and stress management workshops. Men perceive their WLB regarding child supervision to and from school and paid absence on child's first day of school as poorer than for women, while expectations of balance in these two areas are equally high in both genders. In the current situation, women perceive that companies organize stress management workshops to less satisfactory extent than men, while expectations are high in both genders. Expectations regarding stress management workshops are higher for employees without children or with older children in comparison to employees with preschool and primary school age children. No age differences were found.

The actual situation is better, in comparison to expectations, in the field of:

- flexible working time,
- working from home,
- the possibility of half-time or part-time work.

If the situation in these fields was worse, expectations would maybe also be different. It is expected that employees cannot sense a discrepancy in areas that are well regulated, and consequently have no expectations of improvement.

In order to verify the areas in which employers and employees agree and those in which there are differences in perception, multidimensional scaling (MDS) was used. A comparison between employers who considered the general WLB of their employees to be poor and employees who stated that their WLB is poor was made.

The actual situation in the areas in question is for the most part rated lower than expectations, with a few exceptions. The latter include:

- non-discrimination against groups of employees,
- social gatherings for employees' families,
- a compressed working week,
- half-time work.

The last three areas were given a higher rating by employers, while the first was rated higher by employees. These areas are unproblematic and do not require signifi-

cant attention, because the perception of these areas is sufficiently well-balanced.

Areas where the perception of the two groups is broadly consistent but that require more attention are:

- the ability to take time off to care for family members,
- time and stress management workshops,
- paid leave for parents on a child's first day of school.

The situation in all these areas is poor, while expectations are high, with both employers and employees aware of this to a similar extent.

A significant discrepancy between the views of employers and employees can be observed in the case of:

- child supervision to and from school,
- working from home,
- the provision of childcare for pre-school children and school-age children,
- flexible working time.

Employers consider child supervision to and from school to be better regulated than employees do. At the same time, employees' expectations of balance in this area are high. It should therefore be pointed out to employers that more attention could be devoted to this area.

Working from home is an area that employers consider to be poorly regulated and deserving of their attention, since they believe that employees have specific expectations with regard to the regulation of this area. In fact, however, from the point of view of employees, this area is less important.

Employers believe that the provision of childcare for pre-school children and out-of-school care for school-age children during school holidays is more problematic than employees do. At the same time, however, balance in this area appears more important to employees than it does to employers.

Flexible working time is an area where the assessment of the situation on the part of employees is lower than the assessment of employers. At the same time, employers believe expectations of balance in this area to be higher than expressed by employees. This is actually an area that does not require particular attention from employers.

Organisations play a significant role in WLB. The incorporation of WLB strategies into the strategic and financial planning of an organisation can, in fact, have positive business, economic and social effects. The results of our research show that more attention has to be paid to flexible working time, the employees' ability to take time off to care for family members, time and stress management workshops and paid leave for parents on a child's first day of school. In this respect, it is also important to be aware of the responsibility of employees, since they are the only ones able to express their expectations and needs and only in this way can employers be made aware of their problems and help them address the problem of work-life imbalance.

It needs to be mentioned that the state has the impact on employees' WLB as well. The state's responsibility is to encourage all social partners to shape the living environment in which employees' can balance their work and private life with an emphasis on gender equality. This includes e.g. enshrining into legislation leave schemes that implicate the wide variety of family needs, the promotion of flexible working time arrangements, time coordination of public service offices (pre-school childcare provision, out-of-school childcare provision (including in school holidays and while a child is sick), school meals and home care services).

The research does not actually give a satisfactory explanation of the factors that influence the assessment of WLB on the part of the two groups of participants. It should also be emphasised that the conclusions regarding the general assessment of balance relate to two different populations, and therefore the shares expressed are not mutually comparable. It is also necessary to be aware of the fact that, in the case of organisations, the response rate was low, while in the case of employees, partly as a result of the survey method used (online questionnaire), the sample included a large proportion of highly educated personnel, which may also be reflected in the results. The conclusions are thus limited to the part of the population included in the sample.

Acknowledgements

The research project Improving the Working Environment with Innovative Solutions (INODEL), on which this article draws, was part-financed by the European Union from the European Social Fund (ESF). The data was originally collected by the Faculty of Administration, University of Ljubljana as an executive partner in partnership with the following social partners: the Chamber of Commerce and Industry of Slovenia, the Association of Employers of Slovenia, the Council of Gorenjska Union, and Slovenian Union – Alternativa.

References

- Albanese, P. & Farr, T. (2012). I'm lucky'....; to have child care: evoking luck while managing child care needs in a changing economy. *International Journal of Child, Youth & Family Studies*, 3(1), 83–111. Retrieved January 09, 2014 from <http://journals.uvic.ca/index.php/ijcyfs/article/view/10475/3108>
- Albertsen, K., Kauppinen, K., Grimsmo, A., Sørensen, B. A., Rafnsdóttir, G. L. & Tómasson, K. (2007). *Working time arrangements and social consequences - What do we know?* København: Nordic Council of Ministers.
- Arbon, C.A., Facer, R.L. & Wadsworth, L.L. (2012). Compressed Workweeks – Strategies for Successful Implementation. *Public Personnel Management*, 41(3), 389–405, <http://dx.doi.org/10.1177/009102601204100301>
- Begall, K. & Mills, M. (2011). The Impact of Subjective Work Control, Job Strain and Work–Family Conflict on Fertility

- Intentions: a European Comparison. *Eur J Population*, 27, 433–456, <http://dx.doi.org/10.1007/s10680-011-9244-z>
- Bonet, R., Cruz, C., Fernandez Kranz, D. & Justo, R. (2013). Temporary contracts and work-family balance in a dual labour market. *Industrial and Labour Relations Review*, 66(1), 55–87. Retrieved January 09, 2014 from <http://digitalcommons.ilr.cornell.edu/ilrreview/vol66/iss1/3>
- Buehler, C. & O'Brien, M. (2011). Mothers' Part-Time Employment: Associations With Mother and Family Well-Being. *Journal of Family Psychology*, 25(6), 895–906, <http://dx.doi.org/10.1037/a0025993>
- COFACE (Confederation of Family Organizations in the European Union). (2008). COFACE Position on reconciling family life, private life and professional life to prevent poverty and social exclusion. Adopted by the Administrative Council of COFACE on 15-16 December 2008. Retrieved May 17, 2010, <http://coface-eu.org/en/upload/WG%20SOCIAL/WG1-2008-PositionCOFACE-reconciliation-EN.pdf>
- Davis, A. & Kalleberg, A. (2006). Family friendly organizations: Work and family programs in the 1990. *Work and Occupations*, 33(2), 191–223, <http://dx.doi.org/10.1177/0730888405280446>
- Den Dulk, L. & Doorne-Huiskes, A. (2010). Social Policy in Europe: its Impact on Families and Work. In: Crompton, R., Lewis, S. & Lyonette, C. (ed). *Women, Men, Work and Family in Europe*. United Kingdom: Palgrave Macmillan, pp. 35–57.
- Den Dulk, L., Groeneveld, S. & Bram, P. (2014). Workplace worklife balance support from a capabilities perspective. In: Hobson (ed). *Worklife balance. The Agency & Capabilities Gap*. United Kingdom: Oxford University Press, pp. 153–173.
- European Foundation for the Improvement of Living and work conditions. (2007). Combining family and full-time work. Retrieved April 08, 2010 from <http://www.eurofound.europa.eu/ewco/reports/TN0510TR02/TN0510TR02.pdf>
- European Economic and Social Committee (2007). Opinion of the European Economic and Social Committee on The role of the social partners in reconciling working, family and private life. Exploratory opinion. SOC/271 – CES 998/2007, 11 July 2007, Brussels. Retrieved May 15, 2010, from <http://www.eesc.europa.eu/?i=portal.en.soc-opinions.14131>
- Fagan, C. & Walthery, P. (2014). Working time capabilities at workplace: individual adjustment options between full-time and part-time working in European firms. In: Hobson B. (ed). *Worklife balance. The Agency & Capabilities Gap*. United Kingdom: Oxford University Press, pp. 174–205.
- Fahlen, S. (2014). The agency gap: policies, norms, and working time capabilities across welfare states. In: Hobson B. (ed). *Worklife balance. The Agency & Capabilities Gap*. United Kingdom: Oxford University Press, pp. 35–56.
- Fagnani, J. (2010). Fertility Rates and Mother's Employment Behaviour in Comparative Perspective: Similarities and Differences in Six European Countries. In: Crompton, R., Lewis, S. & Lyonette, C. (ed). *Women, Men, Work and Family in Europe*. United Kingdom: Palgrave Macmillan, pp. 59–75.
- Fernández Cordón, J. A. (2009). Policy issues for reconciling work and the family. The United Nations Expert Group Meeting on 'Family policy in a changing world: Promoting social protection intergenerational solidarity'. Doha, Qatar, 14–16 April 2009. Retrieved May 05, 2010, from <http://www.un.org/esa/socdev/family/docs/egm09/Cordon.pdf>
- Fox, E., Pascall, G. & Warren, T. (2009). Work-family policies, participation, and practices: fathers and childcare in Europe. *Community. Work & Family*, 12(3), 313–326, <http://dx.doi.org/10.1080/13668800902966323>
- Galea, C. Houkes, I. & De Rijk, A. (2013). An insider's point of view: how a system of flexible working hours helps employees to strike a proper balance between work and personal life. *The International Journal of Human Resource Management*, 25(8), 1090-1111, <http://dx.doi.org/10.1080/09585192.2013.816862>
- Hashiguchi, M. (2010). Flexible working arrangements and specific training in the UK voluntary sector: A case study. *Economic and Industrial Democracy*, 31(4), 431–447, <http://dx.doi.org/10.1177/0143831X10365575>
- Halpern, D. F. (2005). How time-flexible work policies can reduce stress, improve health and save money. *Stress and Health*, 21, 157–168, <http://dx.doi.org/10.1002/smi.1049>
- Hinkin, T.R. & Tracey, J.B. (2010). What Makes It So Great? An Analyses of Human Resources Practices among Fortune's Best Companies to Work For. *Cornell Hospitality Quarterly*, 51(2), 158–170, <http://dx.doi.org/10.1177/1938965510362487>
- Hobson, B. (2014). Introduction: capabilities and agency for work-life balance – a multidimensional framework. In: Hobson B. (ed). *Worklife balance. The Agency & Capabilities Gap*. United Kingdom: Oxford University Press, pp. 1–31.
- Hong, S. A. (2009). Work-Family Balance Policies: From a Comparative Perspective. GSPR2009, vol. 2. Retrieved April 02, 2010, from [http://www.GSPR2009_2_05_Seung_Ah_Hong\[1\].pdf](http://www.GSPR2009_2_05_Seung_Ah_Hong[1].pdf)
- ILO (2004). The family friendly workplace. Geneva. Retrieved April, 07, 2010 from <http://www.ilo.org/public/english/protection/condtrav/pdf/infosheets/wf-3.pdf>
- ILO. (2004a). Making work arrangements more family-friendly. Geneva: International Labour Office.
- Joyce, K., Pabayo, R., Critchley, J. A. & Bamba, C. (2010). Flexible working conditions and their effects on employee health and wellbeing. *Cochrane Database of Systematic Reviews*, 2, 1–89, <http://dx.doi.org/10.1002/14651858.CD008009.pub2>
- Kanjou Mrčela, A. & Černigoj Sadar, N. (2014). Capabilities for work life balance in the context of increasing work intensity and precariousness in the service sector and the IT industry in a transitional economy. In: Hobson B. (ed). *Worklife balance. The Agency & Capabilities Gap*. United Kingdom: Oxford University Press, pp. 238–265.
- Kelly, E., Kossek, E., Hammer, L., Durham, M., Bray, J., Chermack, K., Murphy, L. & Kaskubar, D. (2008). Getting There From Here: Research on the Effects of Work-Family Initiatives on Work-Family Conflict and Business Outcomes. *The Academy of Management Annals*, 2(1), 305–349, <http://dx.doi.org/10.1080/19416520802211610>
- Kelly, E.L., Phyllis, M. & Tranby, E. (2011). Changing Workplaces to Reduce Work-Family Conflict: Schedule Control in a White-Collar Organization. *American Sociological Review*, 76, 265–90, <http://dx.doi.org/10.1177/0003122411400056>
- Kossek, E.E. & Michel, J.S. (2010). Flexible work schedules. In: Zedeck, S. (ed.). *APA Handbook of industrial and organizational psychology*. Washington DC: American Psychological Association.
- Littig, B. (2008). Work Life Balance – catchword or catalyst for sustainable work? Institute for Advanced Studies, Vienna. Retrieved May 15, 2010, from <http://www.ihs.ac.at/publications/soc/rs85.pdf>

- OECD. (2007). OECD Policy Brief. Can Policies Boost Birth Rates? Observer OECD, Paris, November. Retrieved May 08, 2010, from <http://www.oecd.org/dataoecd/6/57/39970765.pdf>
- OECD. (2008). Policy Brief. Babies and Bosses: Balancing Work and Family Life. OECD Observer, July. Retrieved April 26, 2010 from <http://www.oecd.org/dataoecd/12/2/34566853.pdf>
- Thévenon, O. (2008). Family policies in Europe: available databases and initial comparisons. *Vienna Yearbook of Population Research*. Verlag der Österreichischen Akademie der Wissenschaften, 165–177, <http://dx.doi.org/10.1553/populationyearbook2008s165>
- Vandell, D. L. & Shumow, L. (1999). After-School Child Care Programs. *The Future of Children When School is Out*, 9(2), 64–80, <http://dx.doi.org/10.2307/1602707>
- Van Dyne, L., Kossek, E. & Lobel, S. (2007). Less need to be there: Cross-level effects of work practices that support work-life flexibility and enhance group processes and group-level OCB. *Human Relations*, 60(8), 1123–1154, <http://dx.doi.org/10.1177/0018726707081657>
- Warren, T., Fox, E. & Pascall, G. (2009). Innovative Social Policies: Implications for Work–life Balance among Low-waged Women in England. *Gender, Work and Organization*. 16(1), 126–150, <http://dx.doi.org/10.1111/j.1468-0432.2008.00433.x>
- Wharton, A.S. (2012). Work and Family in the 21st Century: Four Research Domains. *Sociology Compass*, 6(3), 219–235, <http://dx.doi.org/10.1111/j.1751-9020.2011.00450.x>

Tatjana Kozjek is a Senior Lecturer at the Faculty of Administration, University of Ljubljana, Slovenia. She teaches Theory of Organization, Dealing with People in Public Administration, Organizational Behavior, Basics of Organization, Administrative Operation and Personnel Service. She received her master's degree at the Faculty of Organizational Sciences, University of Maribor and her doctorate at the Faculty of Administration,

University of Ljubljana. Her research interests are in flexibility and security in the field of work. She is a member of the Slovenian Human Resource Association and various project groups.

Nina Tomažević is a Senior Lecturer at the Faculty of Administration, University of Ljubljana, Slovenia. She teaches Basics of Organisation, Theory of Organisation, Public Sector Management and Social Responsibility. She received her master's degree and doctorate at the University of Ljubljana. Her research interests are in human resources management, social responsibility and business excellence. Her latest monograph 'Družbena odgovornost in odličnost javne uprave' (Social Responsibility and Excellence in Public Administration) was published in 2011 and in 2010 she contributed to the monograph 'The Role of Public Administration in Social and Economic Transformation in South East Europe' with the paper 'Human Resources Management as a Managerial Function – a Must for an Efficient Public Sector'. In 2011 and 2012 she has participated in conferences on different themes connected with Work-Life Balance, where she has presented the results of research within the context of the EU-funded INODEL project (2010–2012).

Janez Stare is Assistant Professor of Public Sector Organisation at the Faculty of Administration, University of Ljubljana, Slovenia. He holds a master's degree in HRM and a doctorate in leadership in public administration. His main research interests are current issues in human resources management, leadership and public sector organisation. He is a member of various project groups. He has served as a member (2009–2012) and chairman (2011–2012) of the Civil Service Appointments Board, the body responsible for, among other things, the selection of officials for positions in the public administration, the definition of standards of professional qualifications, selection criteria and methods of qualifications testing. Within the INODEL project he is coordinator in the field of employee turnover and project leader.

Usklajevanje poklicnega in družinskega življenja glede na področje, dejansko stanje in pričakovanja – prekrivanje mnenj delodajalcev in zaposlenih v Sloveniji

Ozadje: Področju usklajevanja poklicnega in družinskega življenja se v zadnjem času posveča več pozornosti. Vlogo in odgovornost pri usklajevanju imajo tako države kot organizacije in zaposleni. Prispevek prikazuje pomembna področja usklajevanja poklicnega in družinskega življenja ter vloge, ki jih imajo pri tem država, organizacije in zaposleni.

Namen: Namen raziskave je bil primerjati in analizirati razlike v dejanskem stanju in pričakovanih delodajalcev in zaposlenih glede posameznih področjih usklajevanja poklicnega in družinskega življenja.

Metodologija: Podatki so bili zbrani z metodo CAWI (s spletnim anketiranjem). V prvem delu raziskave so bili k sodelovanju v raziskavi povabljeni delodajalci tako v javnem kot v zasebnem sektorju v Sloveniji. V drugem delu pa zaposleni. Z metodo multidimenzionalnega skaliranja (MDS) se je preverilo, na katerih področjih se mnenja delodajalcev in zaposlenih prekrivajo.

Rezultati: Rezultati raziskave kažejo, da morajo slovenski delodajalci večjo pozornost nameniti fleksibilnemu delovnemu času ter delavnicam za obvladovanje časa in stresa. Zaposlenim morajo omogočiti proste dni, namenjene negi družinskih članov ter spremstvu otrok na prvi šolski dan.

Zaključek: Pomembna vloga pri usklajevanju poklicnega in družinskega življenja imajo organizacije. Vključitev programov, ki omogočajo usklajevanje poklicnega in družinskega življenja, v strategijo in finančni načrt organizacije ima pozitivne ekonomske in socialne učinke. Vloga zaposlenih je, da izrazijo svoje potrebe in pričakovanja, saj delodajalci na ta način prepoznajo njihove težave in jim pomagajo. Vloga države je socialne partnerje spodbujati k oblikovanju življenjskega okolja, ki bi omogočilo usklajevanje poklicnega in družinskega življenja zaposlenih, s poudarkom na enakosti spolov.

Ključne besede: usklajevanje poklicnega in družinskega življenja, država, politika, delodajalec, zaposleni, multidimenzionalno skaliranje (MDS)

Appendix 1: Normal distribution of variables – employers

	Shapiro-Wilk		
	Statistic	df	Sig.
Flexible working time	.899	982	.000
Compressed working week	.891	982	.000
Half- or part-time work	.854	982	.000
Working from home	.482	982	.000
Non-discrimination against employees	.843	982	.000
Provision of childcare	.613	982	.000
Paid leave on a child's first day of school	.684	982	.000
Gatherings for employees' families	.866	982	.000
Time off allowed to care for family members	.839	982	.000
Child supervision to and from school.	.590	982	.000
Stress-management workshops	.803	982	.000
Flexible working time	.804	982	.000
Compressed working week	.844	982	.000
Half- or part-time work	.811	982	.000
Working from home	.857	982	.000
Non-discrimination against employees	.790	982	.000
Provision of childcare	.299	982	.000
Paid leave on a child's first day of school	.651	982	.000
Gatherings for employees' families	.775	982	.000
Time off allowed to care for family members	.804	982	.000
Child supervision to and from school.	.815	982	.000
Stress-management workshops	.828	982	.000
WLB	.877	982	.000

Appendix 2: Normal distribution of variables – employees

	Shapiro-Wilk		
	Statistic	df	Sig.
Flexible working time	.828	595	.000
Compressed working week	.857	595	.000
Half- or part-time work	.798	595	.000
Working from home	.873	595	.000
Non-discrimination against employees	.613	595	.000
Provision of childcare	.587	595	.000
Paid leave on a child's first day of school	.693	595	.000
Gatherings for employees' families	.832	595	.000
Time off allowed to care for family members	.676	595	.000
Child supervision to and from school.	.682	595	.000
Stress-management workshops	.786	595	.000
Flexible working time	.886	595	.000

	Shapiro-Wilk		
	Statistic	df	Sig.
Compressed working week	.903	595	.000
Half- or part-time work	.902	595	.000
Working from home	.878	595	.000
Non-discrimination against employees	.786	595	.000
Provision of childcare	.637	595	.000
Paid leave on a child's first day of school	.798	595	.000
Gatherings for employees' families	.794	595	.000
Time off allowed to care for family members	.792	595	.000
Child supervision to and from school.	.795	595	.000
Stress-management workshops	.787	595	.000
WLB	.874	595	.000

Appendix 3: Testing consecutive pairs of variables – employers

	Z	value p
SITUATION		
Half- or part-time work – compressed working week	-10.112	0.000
Time off allowed to care for family members – compressed working week	-3.778	0.000
Time off allowed to care for family members – non-discrimination against women...	-20.306	0.000
Non-discrimination against women... – flexible working time	-16.817	0.000
Outings/gatherings for family members – flexible working time	-1.860	0.063
Child supervision to and from school – outings/gatherings for family members	-18.540	0.000
Time/stress-management workshops – child supervision to and from school	-7.618	0.000
Time/stress-management workshops – provision of childcare	-7.272	0.000
Paid leave on a child's first day of school – provision of childcare	-20.313	0.000
Paid leave on a child's first day of school – working from home	-18.376	0.000
EXPECTATIONS		
Non-discrimination of employees – flexible working time	-2.322	0.020
Non-discrimination of employees – compressed working week	-3.021	0.003
Child supervision to and from school – compressed working week	-.810	0.418
Child supervision to and from school – outings/gatherings for family members	-.625	0.532
Outings/gatherings for family members – half- or part-time work	-.041	0.967
Working from home – half- or part-time work	-3.620	0.000
Paid leave on a child's first day of school – working from home	-2.453	0.014
Paid leave on a child's first day of school – provision of childcare	-15.442	0.000
Time/stress-management workshops – provision of childcare	-1.659	0.097
Time/stress-management workshops – time off allowed to care for family members	-1.344	0.179

Appendix 4: Testing consecutive pairs of variables – employees

	Z	Value p
SITUATION		
Non-discrimination against employees – half- or part-time work	-13.818	.000
Outings/gatherings for family members – half- or part-time work	-3.509	.000
Outings/gatherings for family members – flexible working time	-1.860	.063
Working from home – flexible working time	-1.673	.094
Working from home – compressed working week	-2.141	.032
Provision of childcare – compressed working week	-.360	.719
Time off allowed to care for family members – provision of childcare	-3.801	.000
Time/stress-management workshops – time off allowed to care for family members	-9.118	.000
Time/stress-management workshops – child supervision to and from school	-7.618	.000
Child supervision to and from school – paid leave on a child's first day of school	-3.744	.000
EXPECTATIONS		
Child supervision to and from school – outings/gatherings for family members	-1.592	.111
Outings/gatherings for family members – non-discrimination of employees	-.948	.343
Time/stress-management workshops – non-discrimination of employees	-.230	.818
Time/stress-management workshops – child supervision to and from school	-1.336	.182
Child supervision to and from school – paid leave on a child's first day of school	-.044	.965
Time off allowed to care for family members – paid leave on a child's first day of school	-.217	.828
Time off allowed to care for family members – compressed working week	-14.675	.000
Half- or part-time work – compressed working week	-2.186	.029
Half- or part-time work – flexible working time	-3.561	.000
Working from home – flexible working time	-.728	.467

DOI: 10.2478/orga-2014-0005

Shaping of Competencies of Managers in Academic Incubators of Entrepreneurship in Poland

Joanna Kurowska-Pysz

Academy of Business in Dąbrowa Górnicza, Department of Management and Production Engineering of Academy of Business in Dąbrowa Górnicza, Faculty in Cieszyn, ul. Frysztacka 44, 43-400, joanna.kp@gmail.com

Background and purpose: Participation of future entrepreneurs in Academic Incubators of Entrepreneurship (AIE) in Poland is one of the innovative paths to shape their managerial competences. The aim of the paper is to analyse and evaluate the activities of the AIEs as an environment inside of which managerial competencies are formed, and formulate recommendations concerning the improvement of AIEs, in terms of the development of managerial skills of future entrepreneurs.

Design/methodology/approach: The author relied on research – study surveys and empirical, qualitative, exploratory research, which were supported by figures. The author focused on four important issues:

- Motives of researchers and students interested in the support of AIE;
- The quality of support offered by the incubator to its participants as well as the frequency of use of this support by future entrepreneurs;
- The possibility of extending the support system for AIE participants;
- Traits / managerial and entrepreneurial competences desired in people running their own businesses.

Results: AIE participants are focused primarily on implementing their business ventures and to a much lesser extent, care about the simultaneous development of their managerial competencies to manage these projects. It is manifested, among other by differentiated assessment of the suitability of certain forms of support from the incubator and the low intensity of use of this support. Despite this, AIE participants perceive the development of desirable traits and strengthening of specific entrepreneurial, management competencies. It is not a very dynamic growth, although it translates into their motivation to start a business after leaving the incubator.

Conclusion: It is recommended to place greater emphasis on mobilizing the future entrepreneurs to make use of forms of support for the development of their managerial competences. It is necessary for complex preparation of future entrepreneurs to independently conduct business after leaving the incubator.

Keywords: Academic entrepreneurship, skills, manager, academic incubator of entrepreneurship

1 Introduction

With the changing economic relations, evolves the approach to tasks and managerial competences. Traditionally, the manager is defined as a person responsible for actions of subordinate structures, achieving business goals and striving to increase efficiency through the use of appropriate meth-

ods of managing people, but it is difficult to determine what functions modern manager fulfills.

A modern manager should be a leader, an analyst and strategist, an inspirer, innovator and a good expert in his/her industry. To distinguish the business roles of managers, they are also being divided into entrepreneurs – which are people setting up their own businesses and running them on

their own account and risk, and intrapreneurs – managers competent in managing the enterprise or part thereof, showing the ingenuity and initiative, but aimed at the development of the company which they do not own (Nogalski and Śniadecki, 2001).

The development of managerial competencies is an individual, multistage and complex process. Not everyone has the aptitude and ability to be a competent manager, but many skills associated with this function can be improved and developed with help of personal or general training. The effectiveness of developing managerial competencies depends on many factors, among others: individual predispositions, attitude towards personal development, type and quality of experience and the environment in which they are formed. Those managers who set up their own businesses are subject to specific verification by the market. Only some of them manage to get through the first, most difficult step associated with starting a business. The development of their own business model is usually a risky business, but also an excellent way to gain experience and competences, so useful in the course of work of managers. To meet the needs of people wishing to start their own business, Polish government has included in the Innovative Economy Operational Programme the measures for development of business incubators, which tasks include, among others, comprehensive support for young people starting businesses and testing their business ideas in operating at universities – Academic Incubators of Entrepreneurship. The activities of these units are focused primarily on the development of managerial skills of young people in developing their own businesses inside incubators, and also serving as organizational and even financial support in matters relating to accounting, marketing, administrative support, offices etc.

The priority actions of Academic Incubators of Entrepreneurship as a network to support budding entrepreneurship, especially in academia, is a comprehensive support of people who are planning to run independent business. The activity formula of this organization relies heavily on the institutional solution that enables its participants acquisition and handling of their own customers under the aegis of the Academic Incubators of Entrepreneurship, without having to set up their own business. The purpose of participation in an incubator to test and improve the participant's invented the business model so that after a period of 2-3 years of operation in the incubator, a mature start-up can smoothly become independent as a separate company. There is no doubt (Drucker, 2008) that entrepreneurship is a feature, as well as the behaviour of the entrepreneur and enterprises, i.e.

- willingness and ability to take up and solve new problems in a creative and innovative way,
- the ability to use new opportunities and occasions,
- flexibility to adapt to changing conditions.

Young manager may spend maximum two years in the Incubator. It is to be a period of intense personal and professional development, and above all gaining competencies enabling him further, self-development of company after leaving the incubator.

The aim of the paper is to determine the motivation of people joining the incubators and their awareness of the need to develop entrepreneurial traits and managerial competencies, as an essential requirement for success of business model being tested in an incubator. The author has also attempted to assess the extent to which participation in the incubator fosters the development of managerial skills of its participants. provides its participants with such support. The application purpose of this paper is to formulate recommendations for improving the system of support from AIEs for young managers developing their competencies in these units.

2 Theoretical background

The Recommendations of the European Parliament and of the Council on key competencies for lifelong learning from 10.11.2005, define the term “competence”, as a combination of knowledge, skills and attitudes appropriate to the situation, especially in the labor market. The term: competences refers to specific individuals and their behaviours in the workplace i.e. desired behaviours, leading to competent actions. (Delamare Le Deist and Winterton, 2005). In this behavioural approach, specific behaviours within given competence are being described. In a general sense, they are defined as the ability of an employee to work for achieving the intended purpose, but in more specific terms – they mean whole knowledge, experience, attitudes and a willingness of employee to act in given circumstances, and the ability to adapt to changing conditions.

Managerial competencies include the perception of goals, attitudes and motives of individuals, knowledge of social structures (technological and social environment, organizational culture), and the effectiveness of reaching the objectives and social skills (communication, motivation, evaluation of team of employees, etc.) as well as the ability to apply knowledge in practice. Competencies are of fundamental importance for the awareness of managers, which is a special kind of perception of the company, in order to create ideas on changes and their implementation (Bartkowiak, 2003).

Leading role in the competences of managers plays professional knowledge (Kowalczyk & Nogalski, 2007), skills of making the right decisions in time, interaction, experience, respect for cultural and ethical rules. Competence gap and negative effects of lack of competence are usually manifested in faulty management, unsatisfactory quality, loss of competitiveness, customers, and the market. Proper competencies management means the need of having and

Table 1: Companies' and managers' competencies (Oleksyn, 2003).

Competencies type	Reference to company	Reference to managers
Universal	<ul style="list-style-type: none"> - The ability to accomplish the mission, vision and strategic objectives - The ability to self-finance and income generation, - Operating efficiency and ability to effectively cooperate with the environment, - The ability to conduct business with the principles of law, ethics, and environmental requirements. 	<ul style="list-style-type: none"> - The ability to design and effectively implement the mission, vision and strategic objectives of the company, - Knowledge and professional skills to perform all the functions of management and represent the company externally, - Efficient, rational and ethical management of all the resources of the organization (human, financial, physical), - Manage their time and information.
Specific	They arise from the portfolio of products, markets, customers and determine the ability to manage the entity in variable market conditions and the ability to apply solutions adequate to the situation.	They are a compilation of company-specific competencies and professional skills of managers, i.e. cognitive competencies (learning, comprehension, memory, curiosity, openness) and functional competence (competence for a particular profession and work efficiently at a given position) (F. Delamare Le Deist, J. Winterton, 2005).
Personal	X	Disclosed by the manager at work, as his strengths enable him to effectively fulfil his role as a professional such as creativity, communication skills, organizational skills, etc.

developing relevant competencies by both enterprise owners, as well as employed managers. Professionalization of the manager's work serves the utilization of his competencies in intelligently implemented work processes, and above all in the development of innovation. Increasingly important role among the components of managerial competencies plays creative thinking and action based on imagination, the ability to focus on clients, but also sensitivity to the problems of workers (Sajkiewicz, 2008).

It stands out among others the division on universal, specific and personal competencies (Oleksyn, 2003). First two categories may relate both to the company as well as its managers.

Managers should develop both universal and personal competencies, but also special ones correlated with company's specific market and industry situation. Particular emphasis on the development of competencies should be placed in the first period of manager's career when his powers and abilities are mainly based on theoretical, academic education, and to a lesser extent, on contact with professional practice. The AIEs support system offers young managers the ability to effectively connect these two spheres of gaining experience.

AIE network is mainly used by academic staff and students of Polish universities, interested in developing their own businesses. They have a very close contact with knowledge, since they combine scientific activities (academic staff) or education (students) with a perspective of thinking

about their own company, which will be able to offer innovative products and services to the market. Within the AIE they have a chance to test their business models (Drucker, 2004). These provide an opportunity to experiment with their own business ideas without having to formalize a business venture. The support from the incubator also includes training, enabling the improvement of competencies of future entrepreneurs as managers of their own companies, as well as access to expertise that benefits business development. Nowadays knowledge is the most critical of all the resources that shape the company's activities, which forces companies to take a special care of not only the competence of managers, but also employees (Drucker, 1999). At the same time managers, supervisors, operators who require continuous learning from their subordinates, should be an example of development of their own knowledge and various skills. It is both knowledge the company has, as well as knowledge derived, for example, from a university, technology park, etc. When the ambition of being an entrepreneur, a manager is manifested by a researcher or student - his access to sources of knowledge is much better, but at the same time he has to face a number of specific barriers related with that environment (Szczepańska-Woszczyzna & Dacko-Pikiewicz, 2007).

As it is pointed out in the study of 51 micro-companies (start-ups) operating in the Slovenian technology parks, better knowledge management leads to better performance of young companies and greater satisfaction of

their employees. Similar studies carried out in Austria have shown that start-ups operating in the incubators, created 1323 workplaces, while 72% of these have been formed by entrepreneurs with higher education, and it was directly connected with the creation of knowledge (Novak, Roblek and Devetak, 2013).

A favorable climate for close contact with knowledge for future managers is being provided by – among others – their activity in Academic Incubators of Entrepreneurship, which model of functioning will be described later in this work. The Incubators can be seen as catalysts for the development of entrepreneurship, perceived as a process of creating new values, where as a result of time and effort, the risk incurred, the entrepreneur receives an award in the form of profit, satisfaction and independence (Hisrich and Brush, 1985). In this particular case, we can also talk about the so-called academic entrepreneurship, which, in accordance with the Polish Act of 27 July 2005 – Law on Higher Education (Journal of Laws No. 164, item. 1365, amended.) should be an important area of activity of universities. It is most commonly defined as a supporting of transfer of knowledge and new technologies into the economy, expressed, *inter alia*, by promoting pro-entrepreneurial attitudes among students and academic staff, as well as supporting entrepreneurs who are students, alumni, PhD students and researchers.

Academic entrepreneurship is currently being implemented in Poland, among others, through a network of 38 branches of Academic Enterprise Incubators that are working with leading Polish universities. These incubators are run by the foundation, which received funding from the Innovative Economy Program, a part of the European Regional Development Fund

(http://ec.europa.eu/regional_policy/thefunds/regional/index_en.cfm). Incubators have been set up under the Project “Road to Entrepreneurial Polish,” which aim was to create a new quality of supporting entrepreneurship in Poland, especially the small and medium-sized businesses created by scientists and students in academia (<http://www.aip.org.pl/droga-do-polski-przedsioborczej>). Incubators tend to focus on creating innovative business ideas which are supposed to give Polish economy a competitive advantage, and the improvement of competence of future entrepreneurs, managers, preparing them for running independent business in the future. The operational formula of Academic Incubators of Entrepreneurship provides innovative on a European scale, way of running a business in a modern pre-incubation program. By participating in the Incubator budding entrepreneur can legally operate on the market without having to register a company. In relations with the customer he is represented by the incubator, which issues invoices as a formal contractor of services provided by a young entrepreneur. In turn, the entrepreneur – incubator participant is employed on a civil law contract in the incubator and this way obtains payment for his business. This Polish solution differs substantially from the formula

of academic incubators described in the literature (O’Shea et al., 2004). It should be noted that some form of incubation of start-ups are included in the activities of science parks. The International Association of Science Parks (IASP) defines it as an organization managed by specialized professionals, to promote a culture of innovation and development of all businesses and knowledge-based institutions. This is done through the creation and development of innovative companies in the process of incubation, with a strong focus on transfer of knowledge from science to business practice and through providing start-ups with a range of services to facilitate the functioning on the market in the first period of start-up activity (Marciniak, 2007). Similar considerations regarding comprehensive support of processes of incubation, start-ups, working in close connection with transfer of knowledge and know-how from academic environment to the economy relate to the British model (Hayward, 1993), Latvian and Spanish (www.innovation.lv/LTICA).

AIE participants, receive *inter alia*: legal and accounting services, the possibility to use modern office infrastructure, marketing, training and consultancy services, the possibility to exchange experience and apprenticeships with companies already operating in the incubator, and the opportunity to establish contacts with the business community and academia – called “networking”. Businessman in an incubator uses the legal personality of the Foundation (VAT Identification Number, Business Registration No. – REGON, Legal Register of Companies Certificate), thus avoiding the costs and risks of beginning business. In return a beginning businessman can focus on testing his business idea without a risk of error in the financial accounts. At the same time all the procedures of accounting services are designed so that the person operating in the Incubator is able to learn the standards and policies related with trade documents and the functioning of the company on the market. Any entrepreneur operating in the Incubator can build his business model and brand recognition at the same time. By participating in the program, he gains all the necessary tools for this purpose: ongoing marketing support, training (StarUpTraining program with the university and counseling tailored to the needs of the project - StartUp KickOf, Start Up Mentoring).

The most important in the operational formula of the Academic Enterprise Incubators is, that testing of business models is accompanied by continuous training of entrepreneurial and management competencies, both within the training system as well as individual support. The incubator is to be “a hotbed” of new ideas which requires the improvement of creativity and innovation of its participants. It is the ability to constantly seek novelty and their implementation that is now becoming one of the core competencies required of a modern manager, entrepreneur, but also from some employees. “Entrepreneur of knowledge” is a person actively seeking opportunities to manufacture and use knowledge to generate profits, such as transforming scientific knowl-

edge, discoveries and inventions into new products, services and business technology (Jemielniak and Kozminski, 2012). Many authors have assigned the "spirit of enterprise" not only to business owners but also managers employed there as workers (Osborn and Słomczyński, 2005; Hisrich 1990, Cunningham and Lischeron 1991). Often, these workers are referred to as the so-called. knowledge workers representing a high level of expertise, training or experience, oriented to the creation, dissemination and practical application of knowledge (Davenport, 2007). Managerial competences acquired, among others, in Academic Incubators of Entrepreneurship, promote the development of innovation and creativity of both future business owners, as well as salaried managers. Own professional development of entrepreneurs as well as managers, supervisors and their subordinates understood as the management of careers can be a very effective strategy of personnel management, contributing to the success of the company (Suchar, 2003). Career management should take into account inter alia: appropriate training for achieving a high level of professional competence (Armstrong, 2000), which is required for both the entrepreneur - manager managing his own company, as well as a manager hired as an employee. In both cases, it is necessary to define career paths, correlated with the possibilities, aspirations and preferences of the manager, but also the structure of the company, its specificity and development plans. Such an entrepreneur-manager competence development formula is also offered by Academic Business Incubator, where business model testing is accompanied by improvement of managerial skills for future entrepreneurs. They need to gain the skills and experience to be able to creative activity, allowing for the initiation and development of the company, not just its observations, analysis and description of the activity (Timmons, 1990). Prospective entrepreneur should also possess the competencies to create or recognize opportunities and use them regardless of their current resources (Stevenson and Gumpert, 1992). The core competencies to support personal fulfillment, social inclusion, active citizenship and the possibility of the implementation of so-called self-programmable labor (Castills, 2003), can be considered (Bąk and Kulawczuk, 2009; Szczepańska-Woszczyzna, 2004) as follows:

- communication in the mother tongue and in foreign languages,
- mathematical thinking and reasoning in terms of natural sciences,
- the ability to use a computer,
- ability to learn,
- social skills,
- entrepreneurship.

The activities of the company understood as a specific project in implementation consists of different stages and phases that require managers to specific competencies and skills. In terms of the conditions for introduction of the

enterprise on the market, i.e. the first step of its operation the competencies and skills shall include: functional skills (finance, technology, marketing, business organization) and other such as: negotiation and orders contracting, project management, knowledge networking, responsibility and ability to make decisions, customer acquisition, business development, constructing of company structure and its protection (Fayolle, Kyro and Ulijn, 2005).

3 Conceptual research framework

The research problem of this paper concerns the process of shaping management skills of future entrepreneurs as a part of the activities of Academic Incubators of Entrepreneurship. It's all about a settlement on whether the current method of testing business models in Academic Incubators of Entrepreneurship is also effective for the development of managerial skills for future entrepreneurs. Using the findings of her own empirical research, the author seeks to determine to what degree the opportunity to develop entrepreneurial, managerial competencies affects faculty's and students' decision on joining the Academic Incubator of Entrepreneurship, and what actions should be taken by the incubators so that the process of development of these competencies was the most effective.

The cognitive aim of this paper is to analyze and evaluate the activities of the Academic Incubators of Entrepreneurship as an environment shaping managerial competence, and the application aim is to formulate recommendations for improving incubators' activity, in terms of the development of managerial skills of future entrepreneurs.

To achieve the research goal of this paper the author used study and empirical research - qualitative, exploratory, serving to better identify the problem and understand its essence. These studies were supported by the figures, obtained from 22 of the 31 young managers working in two branches of Academic Incubators of Entrepreneurship - in Bielsko-Biala and Katowice.

The author has focused on four important issues:

- Motives of researchers and students for their interest in the support of AIE,
- The quality of support offered by the incubator to its participants, among others, training, coaching, counselling and frequency of use of this support by future entrepreneurs
- Possibilities of extending the support system for AIE participants,
- Features / managerial and entrepreneurial competencies desired in people running their own businesses.

As a starting point for further scientific considerations three working hypotheses regarding the future behaviour of entrepreneurs using AIEs were raised:

1. They focus primarily on opportunities to test their business model, without the risk of making a formal activity, while the possibility to develop entrepreneurial, managerial competencies is of secondary importance for them.
2. They do not use intensively enough of support, offered by the incubator.
3. They note the improvement of their managerial and entrepreneurial competencies in the course of cooperation with the incubator, which will translate into their motivation to start a business after leaving the incubator.

Working hypotheses listed above, were formulated based on the results of the report on the evaluation of effectiveness of the AIEs supported financially by the Ministry of Economy (2008) and from own observations of the author.

Despite the lack of generalizability of the study to the entire network of 38 AIEs, the results have an important cognitive meaning, *inter alia*, for institutions planning to disbursement of the next tranche of the Structural Funds for 2014-2020 - mainly in Silesia, where both studied incubators are located. It's about adjusting the shape of the EU support for the operating incubators to the real needs of their users, as well as further extension of the support and improvement of the quality of support provided by those incubators, including – in terms of placement – even greater emphasis on the development of managerial skills of young entrepreneurs operating in the incubators.

4 Methodology

Quantitative data used to verify the working hypotheses were obtained on the basis of an electronic survey questionnaire, which was sent to e-mail addresses of 31 young entrepreneurs operating in two branches of AIEs (in Katowice and Bielsko-Biala). Coordinators of incubators in Bielsko-Biala and Katowice were responsible for sending questionnaires to incubator participants, for which purpose they used their own database of e-mail addresses of persons operating in incubators. Due to the fact that participation in the study was voluntary and anonymous, there was no certainty of obtaining 100% of responses from persons to whom the questionnaire was addressed.

22 respondents answered the questionnaire. Despite efforts to broaden the scope of research, the Foundation which manages a network of AIEs has authorized only to conduct research in two branches (in Bielsko-Biala and Katowice). Due to the number of responses, the questionnaire was treated only as a numerical support for qualitative research because such small research sample should not be subjected to statistical treatment, due to the lack of representativeness for the assessment of the total population of entrepreneurs operating in this type of incubators. At the

same time it is difficult to determine the real number of participants across the network of incubators as, for example, some people formally belonging to the incubator periodically suspend their cooperation or are simply not active.

The survey was divided into 8 questions open or closed, single or multiple choice. The first question served the assessment of the motives those interested in the support of AIEs are guided by. It was a multiple choice question. Respondents were offered 7 response options, including one open response.

In the second question, respondents were asked to assess the quality of each of the 13 forms of support offered by AIEs using the following scale: 1 – not meeting expectations, 2 – at the level of expectations, 3 – above expectations. Another question also referred to forms of support offered by incubators, but this time respondents were to assess the frequency of using them on a scale: 1 – never, 2 – less than once a month, 3 – once a month, 4 – more than once a month.

The fourth question was an open one, and concerned indicating by the respondents these forms of support, which incubators do not provide, which could be useful for future entrepreneurs.

Fifth question referred to the evaluation of traits/competencies, useful for entrepreneurs running their own businesses (managing a company). Respondents were asked to assess each of the 18 proposed features on a scale: 1 – does not matter, 2 – less important, 3 – important, 4 – very important, 5 – key.

Further questions concerned the respondents already directly benefiting from the support of AIEs. In question 6, respondents referred to the same set of attributes/competencies as in question No. 5, assessing the extent to which they had them, prior entering the incubator and now. Evaluation was conducted on a scale: 1 – none, 2 – low rating, 3 – average rating, 4 – good rating, 5 – very good rating.

In question 7, respondents were asked to answer if, after exiting the incubator, they intend to start their own businesses. Five response options were provided, with one option open. The last question was used to assess whether respondents believe, activity in the Incubator is an appropriate form of development of their managerial competencies as future entrepreneur.

Before the survey, the test survey was performed, which involved three participants of AIE in Bielsko-Biala. The results of the test survey helped to clarify some variants of answers and verify the order of questions.

Among 22 respondents to the questionnaire 18 of them were people with higher education and 4 persons with secondary education. As many as 15 respondents had been working in the incubator for less than 6 months, 1 person for about a year, three more people had been working for more than one year, and 3 people - more than two years. 4 persons participating in the study had student status, and the 18 – a graduate.

All returned surveys were complete. After calculating the results obtained for individual answer variations to ques-

tions No. 1-8, data were subjected to statistical processing in MS Excel (calculation of the arithmetic mean), which allowed the author to obtain the results presented in Table 2. As mentioned above, the resulting figures are not representative to the whole population of incubator participants, but they have only supporting character in relation to qualitative, exploratory research conducted by the author.

5 Results

The first working hypothesis included a statement that future entrepreneurs benefiting from AIEs focus primarily

on opportunities to test their business model, without risk of making a formal business activity, while development of their entrepreneurial, managerial competencies is of secondary importance for them.

Table 2 presents the motivation of respondents to test their business ideas in the incubator.

Due to the fact that the question was a multiple choice one, the answers do not add up to 22. It follows that more than half of the respondents decided to cooperate with the incubator due to the prestige and image, this form of enterprise development support enjoys, nearly half of them as an argument for its participation in the incubator also stated the desire to reduce the risk of testing a business idea prior to

Table 2: Motives leaning respondents to test their business idea in the incubator:

No.	Variant of response	Number of responses
1.	Confidence in the principles of the AIE, its prestige and good image	13
2.	The desire to reduce the risk of testing a business idea before a formal foundation of business (work in civil-law contract)	10
3.	The desire to develop their management skills prior to the formal foundation of the company (training, counseling, legal assistance, etc.)	4
4.	The desire to meet other enterprising people, the opportunity to establish business contacts	0
5.	Convenience of the activity within AIE, such as availability, form of settlement, lower cost of activity, etc.	2
6.	Versatile support for those operating in the AIE.	1
7.	Other	0

Table 3: The assessment of the quality of support provided by the incubator:

No.	Rated type of support	Average rating	Standard deviation
1.	AIE Director's counselling regarding running a business	2,00	0,67
2.	Legal care, for example, provided legal advices	1,68	0,56
3.	Provision of accounting services in the field of HR and payroll	2,00	0,80
4.	The right to use the logo Academic Incubators of Entrepreneurship	1,95	0,71
5.	The use of AIE's offices, meeting rooms and office equipment	2,18	0,78
6.	The assistance in obtaining contracts – organization of business meetings	1,77	0,73
7.	Promotion of business activity of AIE participant during organized events	1,90	0,93
8.	Individual bank sub-account	1,95	0,77
9.	Availability of applications supporting business processes	1,77	0,67
10.	Availability of specialized training in marketing and promotion	2,00	0,67
11.	Availability of specialized training in entrepreneurship	2,09	0,51
12.	Coaching from the AIE regarding the development of participant's business idea	2,00	0,73
13.	Support in obtaining funds to start a business	1,54	0,58

the formal foundation of the company. Only four respondents indicated a desire to develop their management skills in an incubator prior to the formal foundation of business. The results presented in Table 1, confirm the hypothesis 1 put forward by the author that the wish to develop entrepreneurial, management competencies within the incubator, is of secondary importance to the participants of AIE, compared to other motives which prompt them to enter into the incubator.

Another question concerned the assessment of the quality of support provided by the incubator (Table 3).

The result of this question is a rating, calculated as an arithmetic average of 22 responses. Respondents had the following grading scale at their disposal: 1 - do not meet my expectations, 2 - at the level of my expectations, 3 - above my expectations. Table 3 also shows the standard deviation in the evaluation of individual forms of support.

When it comes to the quality of support from the incubator, the respondents rated highest overall infrastructure of offices and meeting rooms (2.18) and the availability of specialized training in entrepreneurship (2.09) and consulting business, coaching for the development of business ideas, the availability of training specialized in marketing and promotion, and the quality of accounting services in the field of HR and payroll (after 2.0). This means that in spite of the opportunity to develop their entrepreneurial, managerial

competencies in the incubator being of secondary importance for future entrepreneurs, they highly appreciated these forms of support that offer them that opportunity.

The second working hypothesis assumed that future entrepreneurs do not use the support of the AIEs intensely enough. The frequency of use of particular forms of support for the incubator participants are presented in Table 4.

In relation to particular types of support provided by the incubators varying frequency of use by the participants has been observed. A relatively large group of AIE participants avoids the use of specialized training in marketing, promotion, entrepreneurship and AIE in the development of a business idea. The frequency of use of these forms of support by other AIE participants is also not very high.

The analysis of the results presented in Table 3 confirms the hypothesis 2 – that the participants of incubators do not use intensely enough the offered support. This is evidenced by the relatively high number of respondents choosing the options “never” or “less than once a month.” At the same time it is worth noting that even these forms of support (Table 2), which enjoyed a relatively high reputation among the respondents (score of at least 2.0), i.e. “Availability of specialized training in entrepreneurship”, “AIE Director’s counselling regarding running a business”, “Coaching from the AIE regarding the development of participant’s business idea”, the “Availability of specialized training in marketing

Table 4: The frequency of using the services of the incubator.

No.	Rated type of support	The frequency of use of particular forms of support / number of responses			
		Never	Less than once a month	Once a month	More than once a month
1.	AIE Director’s counselling regarding running a business	6	7	8	1
2.	Legal care, for example, provided legal advices	5	9	3	5
3.	Provision of accounting services in the field of HR and payroll	1	9	5	7
4.	Using the logo of Academic Incubators of Entrepreneurship	7	6	4	5
5.	Use of AIE’s offices, meeting rooms and office equipment	4	7	6	5
6.	The assistance in obtaining contracts – organization of business meetings	7	11	3	1
7.	Promotion of business activity of AIE participant during organized events	8	10	3	1
8.	Individual bank sub-account	0	7	4	11
9.	Use of applications supporting business processes	6	7	6	3
10.	Use of specialized training in marketing and promotion	5	9	6	2
11.	Use of specialized training in entrepreneurship	6	5	5	6
12.	Use of coaching from the AIE regarding the development of participant’s business idea	8	5	3	6
13.	Use of support in obtaining funds to start a business	10	4	4	4

and promotion”, and the “Provision of accounting services in the field of HR and payroll” – are not the most commonly used forms of support.

The third working hypothesis assumed that future entrepreneurs observe an improvement in their managerial competencies in the course of cooperation with the incubator, which will translate into their motivation to start a business after leaving the incubator.

In the last part of the survey, respondents assessed, among others: the importance of stated traits/competencies for entrepreneurs starting their own business. Then, the respondents evaluated their own traits / management competencies at the moment of joining the incubator and at the time of the study (Table 5).

In question 4 (results given in Table 5) the respondents had access to a rating scale: 1 – does not matter, 2 – of little importance, 3 – important, 4 – very important, 5 – key. As shown in Table 5 for incubators participants consider the following features important or crucial to people start-

ing their own business: self-motivation, positive personal image, skills: problem solving, stress management and time management as well as innovation and both enthusiasm and determination in achieving a goal. These attributes were indicated by 15 participants of the study.

In turn, Table 6 shows the own-evaluation of respondents, in relation to the attributes/competencies desired for entrepreneurs. Respondents were asked to assess these attributes for the period prior to their activity in the incubator and during their activity in the incubator. In both cases, the respondents had access to a rating scale: 1 – none, 2 – low rating, 3 – average rating, 4 – good rating, 5 – very good rating. The results were obtained as an arithmetic mean of the 22 responses. According to survey results analysis, the use of the incubator dramatically improved competencies of respondents in terms of: self-motivation to work, problem-solving and time management skills, motivation to share their knowledge with others, as well as the level of acceptance of risk in business, expertise in a particular

Table 5: The significance of attributes / competencies for entrepreneurs starting their own businesses.

No.	Attributes/competencies	Evaluation option/number of indications				
		No matter	Not very important	Important	Very important	Key
1.	Ability to work in a group	1	2	10	7	2
2.	Communication, ease of establishing contacts	0	1	6	4	10
3.	Self-motivation to work	0	2	4	5	11
4.	Self-presentation, personal image	0	1	5	10	6
5.	Ability to solve problems	0	2	4	10	6
6.	Ability to cope with stress	0	2	6	8	7
7.	Ability to manage time, work planning	0	1	6	10	5
8.	Self-improvement, willingness to learn throughout life	0	3	7	6	6
9.	The ability to share knowledge with others	0	3	13	6	0
10.	Innovation, openness, willingness to change	0	0	7	7	8
11.	The enthusiasm and determination in achieving a goal	0	3	4	7	8
12.	Independence	0	2	7	7	6
13.	Controlling of own work and work of others	0	3	8	6	5
14.	Acceptance of risk in business	0	2	7	9	4
15.	Ability to learn from the experiences of others	0	3	5	12	2
16.	Ability to formulate business strategies	0	1	7	10	4
17.	Level of expertise in your industry	0	2	7	8	5
18.	he level of knowledge about your market, competitors, customers	0	1	7	8	6
19.	The ability to exploit the opportunities	0	3	5	7	6

Table 6: Self-assessment of respondents in relation to selected attributes/competencies

No.	Attributes/competencies	Average rating	
		Self-assessment – prior to activity in the AIE	Self-assessment at the time of audit
1.	Ability to work in a group	3,54	3,72
2.	Communication, ease of establishing contacts	3,77	4,04
3.	Self-motivation to work	3,22	3,72
4.	Self-presentation, personal image	3,54	3,63
5.	Ability to solve problems	3,36	4,04
6.	Ability to cope with stress	3,63	4,04
7.	Ability to manage time, work planning	3,45	4,04
8.	Self-improvement, willingness to learn throughout life	3,31	4,18
9.	The ability to share knowledge with others	3,22	3,86
10.	Innovation, openness, willingness to change	3,40	4,22
11.	The enthusiasm and determination in achieving a goal	3,50	3,90
12.	Independence	3,63	4,04
13.	Controlling of own work and work of others	3,31	3,90
14.	Acceptance of risk in business	3,50	4,04
15.	Ability to learn from the experiences of others	3,09	4,22
16.	Ability to formulate business strategies	3,09	3,90
17.	Level of expertise in your industry	3,54	4,22
18.	The level of knowledge about your market, competitors, customers	3,45	4,04
19.	The ability to exploit the opportunities	3,27	4,04

industry and knowledge of the market, competitors and customers (an increase of average assessment by at least 0.50). Strongly strengthened were their skills in three areas: the formulation of business strategies, innovation, motivation for lifelong learning, and the ability to learn from the experiences of others, as well as the formulation of business strategies and exploit the opportunities (an increase of average assessment by at least 0.75). The following skills were rated the lowest by the respondents before entering the incubator: the ability to learn from the experiences of others and the ability to formulate business strategies (average score 3.09), as well as self-motivation to work and the ability to share knowledge with others (average score 3.22), while none of the proposed attributes/competencies have been assessed at a level of at least 4.0. Currently, a number of attributes which the average rating is above 4.0 has been identified among the respondents, which the respondents considered earlier as crucial for people who want to start their own business. These are: problem solving, coping with stress and time management as well as innovation, which,

together with a high level of industry expertise, were rated the highest (4.22 both).

Working hypothesis No. 3 put forward by the author assumed that respondents note the improvement of their management and entrepreneurial competencies during their cooperation with the incubator, which should translate into their motivation to start a business after leaving the incubator. This thesis proved to be true in part because the 10 respondents said that at the end of their activity in the business incubator they are going to open their own business, since they are properly disposed. Another five people claim that they will decide to open up the company if they get additional experience outside the incubator, while seven people had no opinion on the matter. None of the respondents said that after leaving the incubator they will not start a company. In addition, 15 respondents stated that in their opinion the activities at the Academic Incubator of Entrepreneurship is an appropriate form of developing management competencies for a future entrepreneur, while seven respondents had no opinion on the matter. No one denied the thesis that the Academic Incubators of Entrepreneurship are an appropri-

ate form to develop management competencies for future entrepreneurs.

6 Discussion

It is impossible to acquire such entrepreneur, manager skills without education and gaining experience, without learning on real examples. For this reason, the use of the incubator should be considered highly beneficial for future entrepreneurs. Regardless of creating the conditions for testing business ideas, the role of each incubator should be shaping and systematic development of the competencies of its participants. Meanwhile, according to studies, confirming working hypothesis No. 1 put forward by the author, those wishing to take advantage of the incubator rarely expect this kind of support. Incubator participants are focused primarily on how to best prepare their businesses from the organizational and market point of view, not noticing how large a role in the effective implementation of business play the skills of an entrepreneur. Personal experience of the author in collaboration with incubators confirms, that the person entering the incubator often in the course of their activities change or modify the concepts of future business, and gained experience, qualifications and skills are somewhat universal – they will be useful in many areas of future activity. As it turns out, it is most difficult to convince participants of the incubator to use such support (results shown in Table No. 3). When it comes to advice on business, participation in specialized training on entrepreneurship, promotion and marketing or use of the assistance of a coach supporting the development of business ideas – great part incubator participants does not use such support at all, and many use them only occasionally, less than once a month. This is despite the fact that incubators are offering them a diverse and professional offer in this area, which is assessed as being consistent with the expectations of incubator participants, which is confirmed by the results of evaluation of the quality of support provided in Table No. 3.

These reflections prompt the Author to recommend the network of Academic Incubators of Entrepreneurship to put more emphasis on improving the participants' awareness of the need to develop their entrepreneurial and managerial skills through the use of the multiple forms of support in this field. It is also important, due to the fact that Academic Incubators of Entrepreneurship are co-financed by the European Regional Development Fund, thus it is all about the effective spending of EU funds. It is in the interest of all parties that people who leave the incubator were best prepared for the role of the entrepreneur, manager, also because the target group, i.e. incubator academic staff and students, need special support in this regard. Therefore, on the one hand, it is necessary to recommend the incubator participants to use more of such forms of support, and also the continuous enrichment by the incubators of their offer

of courses, training, and individual work with participants, focused on improving their managerial and entrepreneurial skills. Confirmation of working hypothesis No. 2 put forward by the author, leads to the conclusion that perhaps one should consider imposing an obligation to use forms of support for the development of competencies on the incubator participants. This can be somewhat restrictive, but may also contribute to a greater interest in this type of services provided by the incubator. On the other hand, the incubators should consider the specific profile of courses, trainings, etc. that would be mandatory for participants, but also precisely tailored to the needs of the incubators' target group, i.e. academic staff and students.

Another issue is the assessment of the effects of participation in an incubator when it comes to development of the selected features and improving the entrepreneurial competencies of people using such support. As part of the study the author was able to sketch an image of professional entrepreneur who is starting a business, which according to the respondents should be characterized by, among others: communicativeness and the ability to make contacts easily, and also possess the auto-motivation to work. The following also distinguish themselves among other attributes and competencies mentioned by the respondents: innovation, openness and willingness to change the enthusiasm and determination to achieve a goal. Without a doubt, a certain level of these traits and skills can be attributed to persons acting in an incubator, as indicated by the very fact that they decided to join the incubator. These were 7 people among the nearly 8-thousand community of the University of Bielsko-Biala, while among the nearly 40-thousand community of the University of Silesia – 25 people. A separate discussion is required to answer a question, why such a small number of people in the academic community is interested in the activity inside Academic Incubators of Entrepreneurship? Is it influenced by a still-dominant academic career model which is still based mainly on education and conducting basic research? Why only a modest representation of students decides to start a business in this formula during the study, although the principle of incubator's activity in relation to them is the proximity to place of study and earning? The author's intention is to conduct further study of the activities of the Academic Incubators of Entrepreneurship in order to find an answer to these issues, while in this study the author has focused on the analysis of the evaluation of development of entrepreneurial management skills, by the respondents. Due to the relatively short duration of operation of the network of Academic Incubators of Entrepreneurship (2 to 3 years for each branch) it was difficult to find enough examples of continuation of business activity by the start-ups in order to verify on this basis, whether the current method of testing business models in Academic Incubators of Entrepreneurship is also effective for the development of managerial skills for future entrepreneurs. The author

therefore asked people currently participating in incubators to assess their own competence development.

Working hypothesis 3 put forward in this paper assumed that participants notice the improvement of their managerial and entrepreneurial skills during their cooperation with the incubator, which is reflected in their motivation to start a business after leaving the incubator. The evaluation results presented in Table 6 confirms that the respondents see the development of desirable traits and strengthening of particular entrepreneurial, managerial skills, but one has to note that this increase is not very dynamic. Respondents state that at the time of entry into the incubator they had the vast majority of mentioned traits and competencies on at least average level (score of at least 3.0). As a result of participation in an incubator a distinct increase of some of the attributes and competencies has been noted (e.g. by 0.75 percentage assessment points), while for many others the increase is lesser (e.g., about 0.25 percentage point evaluation). Of course, it is difficult to assume that all of participants' traits/managerial, entrepreneurial competencies will be developed in a harmonious way, as a result of participation in training courses, training or coaching, as it depends to some extent on personal qualities, as well as e.g. frequency and motivation to use the support of the incubator. Nevertheless, we should consider which of the traits/competencies the incubators should particularly take into account when it comes to a matter of training, and other forms of support for the participants. The potential of persons acting in incubators should be kept in mind, primarily related to the transfer of knowledge, as a product, to the market, that one can make profit on, such as: scholars that provide their expertise as individual entrepreneurs, such as consulting, R & D services, etc. Without a doubt developed qualities and skills should facilitate the establishment of science-business cooperation and eliminate many barriers on the side of academic staff and students, which can be seeing this field (Kurowska-Pysz, 2012).

The author tried to obtain comparable results of studies regarding competencies of people setting up their business in AIE, but it turned out that such research has not yet been carried out. To my knowledge, the only similar study concerning competencies of people setting up a start-up and enjoying the support of European Social Fund was carried out in the framework of the project »Give yourself a chance - hire yourself«, carried out by Polish Foundation for Supporting Economic Development »OIC Poland « in Lublin (Ćwik, Zbroja and Armour, 2013). The study involved 60 people who were starting a business, using the process of incubation with comprehensive support including, among others: counselling (individual, competence, motivation and business), training the development of business plans as well as business and financial support.

Measurement of competencies of people who want to self-employ themselves was made using ASTRA – STARTER tool, which consists of the following scales:

1. Personal strengths,
2. Dealing with difficulties,
3. Prudence,
4. Self-trust,
5. Knowledge of legal and business environment,
6. Financial management,
7. Starting up a business,
8. Understanding the impact of economic factors.

First four scales relate to general competencies, four more to competencies specific for making business. The results mentioned studies show that obtaining financial support for running their own business, and minimizing the risk of business failure due to so-called *bridging financial support* in the first year of operation (covering rent fees, accounting services, social insurance contributions, etc.), were of paramount importance to the participants of this project (somewhat more favourable conditions for starting a business than in AIEs case), while comprehensive consulting and training which they could use, were of secondary importance to them, and were treated by Project participants as a compulsory requirement to obtain financial support for the development of their own business. These studies also confirmed that, as a result of the project, people who finally managed to start a business obtained significantly higher level of competencies described in the 8 scales above, while those who did not receive support for this purpose (e.g., due to poor motivation, not good enough business idea, etc.) had an average or lower level of competencies. In case of this study, however, the author failed to perform comparative evaluation of the quality of support for incubated companies, because cited study and research done by the author related to the projects implemented by different guidelines, which is also reflected in the range of support received by incubated companies in both cases.

7 Conclusions

The operational aim of all business incubation programs is to create the best possible conditions for people who want to develop their own business. AIEs are primarily focused on the support of people associated with academia, i.e. academic staff and students, who – in their companies – bet on transfer of knowledge and its application in the economy. The vast majority of incubation programs in Poland is supported by the European Union within the framework of various projects. It is similar in AIEs case, which function as an EU project that requires a specific formulation of execution and settlement. This strongly limits the flexibility of incubators, as there is not even possible to change the profile of support for participants beyond what is included in the budget of the Project. This is probably one of the reasons why people who are managing incubators are mainly focused on reaching the quantitative indicators of the pro-

ject, such as the number of companies established in the incubator, but qualitative indicators – such as the quality of the preparation of future entrepreneurs to business activities – that are difficult to measure on the project level, are far less important. For this reason, the study made by the author should be a valuable pictorial material for the management of incubators and people planning EU support for incubators EU for 2014-2020. The study confirms that entrepreneurs using incubators, perceive their business career as primarily one specific project that they want to do in cooperation with the incubator. They do not attach sufficient weight to the fact that at that time, competencies and managerial skills that are gained by them, will pay dividends throughout their lives, regardless of their future professional positions, and regardless of whether the business model created by them in the incubator, will be sustainable and profitable. As it is shown by the research, businesses men leaving the AIE as a mature start-up have a proven idea for their own business in hand, but they are not fully prepared for running it, from the point of view of managers' and entrepreneurs' competencies. It is caused by incubators' activity formula (no compulsion to use certain forms of support), and also low interest from the participants of the incubator. In such a situation it is necessary to take action to motivate future entrepreneurs to intensify the use of the incubator.

Obtained study results are not representative for the entire network of Academic Incubators of Entrepreneurship, due to the fact that it included only two branches of the AIE network. This, however, was a result of a decision of a Foundation which is managing the incubators, which agreed only on the study of such a small range. Nevertheless, the author intends to present her findings to the AIE network with a recommendation regarding the need to create an attributes/competencies profile that should be developed from the point of view of the target group of incubator participants. Without a doubt, current system of support is beneficial for strengthening these qualities/competencies, as evidenced by numerous statements concerning the readiness of respondents to run a business after leaving the incubator, but it appears that further efforts are required in this regard. The idea is to build a profile of traits/competencies that should be reinforced in people participating in the incubators, in order to enable them to become effective managers in the future (Drucker, P., 1994), regardless of whether they develop their careers as independent entrepreneurs or as salaried managers. The author treats this task as a next stage of research on the managerial competencies of AIE participants in 2014-2020.

Literature

- Aernoudt, R. (2004). Incubators: Tool for Entrepreneurship? *Small Business Economics*, 23 (2), 127-135, <http://dx.doi.org/10.1023/B:SBEJ.0000027665.54173.23>
- Armstrong, M. (1998). *Managing People. A Practical Guide for Line Managers*. London: Kogan Page Ltd.
- Bartkowiak, G. (2003). *Skuteczny kierownik – model i jego empiryczna weryfikacja* [An effective manager - model and its empirical verification]. Poznań: Wydawnictwo Akademii Ekonomicznej.
- Bąk, M. & Kulawczuk, P. (2009). *Warunki skutecznej współpracy pomiędzy nauką a przedsiębiorstwami* [Conditions for effective cooperation between science and industry]. Warsaw: Instytut Badań nad Demokracją i Przedsiębiorstwem Prywatnym.
- Cunningham, J.B. & Lischeron, J. (1991). Defining entrepreneurship. *Journal of Small Business Management*, 29 (1), 49-61.
- Ćwik, K. & Zbroja, A. (2013). Kompetencje osób rozpoczynających działalność gospodarczą w województwie lubelskim na przykładzie działania 6.2 Programu Operacyjnego Kapitał Ludzki [Competence of persons beginning the business activity on the example of measure 6.2 Support and promotion of entrepreneurship and self-employment of the Operational Programme Human Capital of Lubelskie Voivodeship]. *Zeszyty Naukowe WSEI, seria: EKONOMIA*, 6(1/2013), p.p. 125-153.
- Davenport, T.H. (2005). *Thinking for living. How to get better performance and results from knowledge workers*. Boston: Harvard Business School Publishing.
- Delamare Le Deist F. & Winterton, J. (2005). What is competence, *Human Resource Development International*, 8(1), 27-46, <http://dx.doi.org/10.1080/1367886042000338227>
- Drucker, P.F. (2006). *The Effective Executive. The definitive guide to getting the right things done*, New York: Harper Business Publishers.
- Drucker, P.F. (1994). *Post-Capitalist Society*. New York: HarperBusiness Publishers.
- Drucker, P.F. (2004). *The Daily Drucker*. New York: HarperBusiness Publishers.
- Drucker, P.F. (2008). *The Essential Drucker*. New York: HarperBusiness Publishers.
- Fayolle, A., Kyro, P. & Ulijn, J. (2005). *Entrepreneurship Research in Europe. Outcomes and Perspectives*. Northampton: Edward Elgar Publishing Inc.
- Hayward, G. (1993). UK Science Park Association - Science Park Directory, 5th ed., *Technovation*, 13 (7), 477-478, [http://dx.doi.org/10.1016/0166-4972\(93\)90034-S](http://dx.doi.org/10.1016/0166-4972(93)90034-S)
- Hisrich, R.D. (1990). Entrepreneurship/intrapreneurship, *American Psychologist*, 45(2), 209-222, <http://psycnet.apa.org/doi/10.1037/0003-066X.45.2.209>
- Hisrich, R.D. & Brush, C.G. (1985). *The Woman Entrepreneur: Characteristic and Prescriptions for Success*. Lexington: Lexington Books.
- Jemielniak, D. & Koźmiński A.K. (2012). *Zarządzanie wiedzą* [Knowledge Management]. Warsaw: Oficyna a Wolters Kluwer business.
- Kowalczyk, A. & Nogalski, B. (2007). *Zarządzanie wiedzą* [Knowledge Management]. Warsaw: Diffin.
- Kurowska-Pysz, J. (2012). *Miejsce wiedzy w rozwoju innowacyjnych firm – szanse i bariery współpracy ośrodków akademickich i przedsiębiorstw / Studia ekonomiczne regionu łódzkiego – formy i uwarunkowania współpracy we współczesnej gospodarce* [Place of knowledge in the development of innovative companies - opportunities and barriers in cooperation between universities and enterprises / Economic studies of

- Lodz region - the forms and conditions of cooperation in the modern economy]. Łódź: PTE Oddział w Łodzi.
- Nogalski, B. & Śniadecki, J. (2001). *Umiejętności menedżerskie w zarządzaniu przedsiębiorstwem* [Managerial skills in business management]. Bydgoszcz: Oficyna Wydawnicza Ośrodka Postępu Innowacyjnego.
- Novak, R., Roblek, M. & Devetak, G. (2013). Relation between Knowledge Management and Turnover in Slovenian Micro and Small Start-Up Organisations. *Organizacija*, 46(3), 99–107, <http://dx.doi.org/10.2478/orga-2013-0008>.
- Marciniak, B. (2007). *Rola parków naukowo-technologicznych w rozwoju małych i średnich przedsiębiorstw* [The role of science and technology parks in the development of small and medium-sized enterprises], Poznań: Wydawnictwo Poznańskie.
- Oleksyn, T. (2006). *Zarządzanie kompetencjami. Teoria i praktyka* [Competence management. Theory and practice], Cracow: Oficyna Wydawnicza.
- Osborn, E. & Słomczyński, K.M. (2005). *Open for business. The persistent entrepreneurial class in Poland*, Warsaw: IFiS Publishers.
- O'Shea, R.P., Allen, T.J., Chevalier, A. & Roche F. (2005). The Creation of Spin-off Firms at Public Research Institutions: Managerial and Policy Implications. *Research Policy*, 34 (7), 994–1009, <http://dx.doi.org/10.1016/j.respol.2005.05.011>
- Public Profits Sp. z o.o. w Poznaniu (2008). *Raport z badania ewaluacyjnego: Ewaluacja działalności Akademickich Inkubatorów Przedsiębiorczości (AIP) wspartych finansowo ze środków Ministerstwa Gospodarki* [Report of the evaluation: Evaluation of the activities of the Academic Incubators of Entrepreneurship financially supported by the Ministry of Economy], Warsaw: Ministerstwo Gospodarki Rzeczypospolitej Polskiej.
- Stevenson, H.H. & Gumpert, D.E. (1992). *The Entrepreneurial Venture*, Boston: Harvard Business School Publications.
- Sajkiewicz, A. (2008). *Kompetencje menedżerów w organizacji uczącej się* [The competence of managers in a learning organization]. Warsaw: Difin.
- Suchar, M. (2003). *Kariera i rozwój zawodowy* [Career and professional development], Gdańsk: Ośrodek Doradztwa i Doskonalenia Kadr.
- Timmons, J. (1990). *New Venture Creation*, Boston: IRVIN.
- Szczyptańska-Woszczyzna K. (2004). Challenges of the labour market for knowledge, skills and attitude of managers-to-be. In: *Formation et développement des compétences manageriales dans l'Europe elargie*, Mikołajczyk Z. & Martin C. (eds.). Łódź University of Łodz.
- Szczyptańska-Woszczyzna K. & Dacko-Pikiewicz Z. (2007). *Attitudes of graduates towards the education and the career*. In: *Economic studies - whether only a knowledge and abilities*, Łódź: FEP.

Joanna Kurowska-Pysz is an assistant professor in the Department of Management and Production Engineering of Academy of Business in Dabrowa Gornicza. She is working with companies and local government, especially in the field of consulting and obtaining EU funds. She has a large experience in managing projects related to the development of academic entrepreneurship, inter alia in the academic centre for technology transfer and academic incubator of entrepreneurship. Among the dozens of published its work, nearly 20 applies to science-business collaboration and innovation and academic entrepreneurship.

Razvoj managerskih kompetenc v akademskih podjetniških inkubatorjih na Poljskem

Ozadje in namen: Sodelovanje bodočih podjetnikov v akademskih podjetniških inkubatorjih (AIE) na Poljskem je eden od inovativnih načinov z razvoj njihovih managerskih kompetenc. Cilj članka je analizirati in oceniti aktivnosti AIE kot okolja znotraj katerega se oblikujejo omenjene kompetence, in izdelati priporočila v zvezi z izboljšanje v delovanju AIE v smislu razvijanja managerskih spretnosti bodočih podjetnikov.

Zasnova/metodologija/pristop: Študija je empirična, kvalitativna preliminarna raziskava, podprta s kvantitativnimi podatki. Avtorica se osredotoča na štiri pomembne vidike:

- motive raziskovalcev in študentov, ki so zainteresirani za podporo s strani AIE
- kvaliteto podpore, ki jo udeležencem nudijo AIE in intenzivnost te podpore
- možnosti širitve podpore udeležencem AIE
- managerske in podjetniške kompetence, ki jih želijo pridobiti udeleženci, ko začnejo s svojo poslovno dejavnostjo

Rezultati: Udeleženci se usmerjajo predvsem na vzpostavljanje svoje poslovne dejavnosti in jih v veliko manjši meri zanima vzporeden razvoj lastnih managerskih kompetenc. Pokazalo se je, da udeleženci različno intenzivno uporabljajo posamezne oblike podpore, nekatere od njih uporabljajo zelo malo. Kljub temu pa zaznavajo, da AIS prispevajo k njihovem razvoju in krepitevi specifičnih podjetniških in managerskih kompetenc. Pri tem ne gre za dinamično rast, vendar se rezultat odraža kot večja motivacija, da začnejo s svojo poslovno dejavnostjo, ko zapustijo inkubator.

Zaključki: Priporočamo, da se bodoče podjetnike bolj motivira da uporabljajo ponujene oblike podpore pri razvoju njihovih managerskih kompetenc. Potrebna je kompleksna priprava bodočih podjetnikov, da neodvisno vodijo svojo poslovno dejavnost po tem, ko zapustijo inkubator.

Ključne besede: Akademsko podjetništvo, spretnosti, manager, akademski podjetniški inkubator

DOI: 10.2478/orga-2014-0006

Training Needs Assessment for Leaders in Nursing Based on Comparison of Competency Models

Andreja Kvas¹, Janko Seljak², Janez Stare²

¹University of Ljubljana, Faculty of Health Sciences, Zdravstvena pot 5, 1000 Ljubljana, Slovenia; andreja.kvas@zf.uni-lj.si

²University of Ljubljana, Faculty of Administration, Gosarjeva ulica 5, 1000 Ljubljana, Slovenia; janko.seljak@kabelnet.net, janez.stare@fu.uni-lj.si

Background and Purpose: The main purpose behind the formation of leadership competency models must be the improvement of leadership. A competency model should serve as one of the tools for selecting the most suitable leaders, appraising their work, assessing training needs and preparing programmes of functional and formal education. The objective of this research is to assess the training needs of leaders in health care. A comparison of leadership competency models between different professional groups should serve as one of the tools with which to assess the training needs of various levels of leaders.

Design/Methodology/Approach: A descriptive study using a survey design was conducted on 141 nurse leaders in Slovenia. Respondents indicated to what extent each of 95 different behaviours was characteristic of a person at their leadership level.

Results: The most important competence dimensions (groups of behaviours) for leaders in health care are (1) at the first - top leadership level: strategic thinking, openness to change and responsibility; (2) for leaders at the second - middle leadership level: relations with co-workers, animation, resistance to stress; and (3) for leaders at the third leadership level: realisation skills, execution of procedures, communication. Training needs assessments were done for three leadership levels in nursing care.

Conclusions: The greatest need for training of nurse leaders can be observed at the third leadership level. Special training programmes should be organised in the competency areas of realisation skills, execution of procedures, communication, education and ethics.

Keywords: Competence; nursing care; leadership; public administration; Slovenia.

1 Introduction

Changes in the sphere of health care for the general population that are the consequence of different contemporary factors (demographical changes, technological development in the field of medicine, consumer behavioural patterns and so forth) are continuously demanding new approaches to operation and organisation in the public sector and in public health care. Many of those changes are driven by the demand for greater efficiency, effectiveness and excellence in the provision of public and private health care services.

Within the health care systems of the majority of countries, the public and private sectors exist in parallel. Ratios differ from country to country, but the health care systems in the majority of European countries are designed in such a way that the largest part is still within the public sector (WHO, 2013). The use of excellence management tools and systems was for a long time limited to the private sector. Such tools only began to appear in the public sector in Europe in the early 1990s, as part of efforts for modernisation, better public management, increased measurement of

Received: 3rd October 2013; revised: 20th November 2013; accepted: 4th January 2014

efficiency and performance and a stronger “customer” focus (Engel, 2002).

These changes are designed to cause a “post-bureaucratic paradigm” characterised by a shift from bureaucratic behaviour to enterprise behaviour (Brooks, 2003). One of the approaches designed to ease this transition is the use of competency models. The main task in the development of competency models is to establish a framework within which competencies can be defined and, within the context of competency profiles, the level of competencies that leaders need in order to do their job successfully. Such a framework should serve as one of the tools with which to select the most suitable candidates for leadership positions, appraise the work of leaders, assess training needs for various levels of leaders and prepare programmes of functional and formal education (Boyatzis, 2008; Mühlbacher et al., 2013; Sarkar, 2013).

Leadership is one of the most important factors affecting the performance and excellence of an organisation (Šparl et al., 2013). The importance of leadership is underlined in various excellence models, e.g. EFQM (European Foundation for Quality Management) (EFQM, 2013) and a special form thereof designed for use in the public sector, the CAF (Common Assessment Framework). In both excellence models, leadership stands out as an important criterion in the assessment of an organisation. By leadership they mean “leading with vision, inspiration and integrity – excellent organisations have leaders who shape the future and make it happen, acting as role models for its values and ethics” (EIPA, 2012; EFQM, 2013).

Leadership has without a doubt been one of the most researched areas in the social sciences field for more than 2000 years (Northouse, 2007; Dimovski et al., 2012). It has been studied in the context of various disciplines, and therefore there are probably as many definitions of leadership as there are writers who have attempted to define it (OECD, 2001). The commonest and simplest definition is that “leadership is a process whereby an individual influences a group of individuals to achieve a common goal” (Northouse, 2007). Leadership standards, characteristics and competency models today form the basis for the development of leadership/management and reviewing progress and procedures within the majority of large organisations (Bolden, 2004).

Competencies are those values, intentions, personal characteristics, abilities, skills, behaviours, knowledge, etc. on the basis of which the individual can develop models of (organisational) behaviour that enable them to work effectively and efficiently. Competencies can only be defined on the basis of observation of the behaviour of the individual (actions in real situations). A system of key competencies formulated on the basis of a study of key indicators of effective leadership behaviour is called a competency model of leadership. When we define normative values of individual (required) competencies within the context of a competency

model, we get a competency profile (Stare, 2009; Stare & Seljak, 2013).

The main purpose behind the formation of leadership competency models must be the improvement of leadership, which will have a positive influence on the efficiency and effectiveness of public administration and the quality of services it offers. The requirements of the job in public administration affect the activity and behaviour of staff. Specific principles of work in public administration are characteristic of all its subsystems, and therefore the behaviours of the leaders managing these subsystems are also similar. For leaders in public administration, a specific part of the environment in which they must lead is the same for all of them (public administration, predominantly non-profit work, problems with motivating staff, etc.) – something we can try and illustrate with generic competencies – while another part of the environment varies from profession to profession – role-specific competencies (in other words additional competencies for leaders in state administration, education, health care, etc.). It is therefore important for public administration to have a developed leadership competency model that can be applied (taking into account the specific characteristics of individual fields) in various fields of public administration. In the field of competency models, models already exist for larger groups of leaders (leaders in state administration, leaders in public health care, change leaders, etc.), which indicates one of the possible directions for greater integration (Cook et al., 2008, Stefl & Bontempo, 2008, Marulic & Devetak, 2013).

In our research, we formulated a competency model of leadership in health care and compared it to the competency model of leadership in state administration (Stare, 2009). In 2011, there were 18,624 nurses employed in the health care sector in Slovenia, of whom between 1,650 and 2,250 were leaders (Institute of Public Health, 2010; Kvas 2013). We compare this group with the group of employees in the civilian part of the state administration in Slovenia, in which there were 15,984 employees in 2011, of whom between 1,900 and 2,300 were leaders (Stare & Seljak, 2013; Kvas, 2013).

The competency model of leadership in state administration was presented in Slovenia in 2007. In the research, on which the competency model was based, 147 leaders in state administration participated. The share of women participating in the survey was 40.9 %. A total of 77.5 % of the respondents had a college or higher education. A total of 24.5% of the respondents were below 40 years of age. The model is set up for state administration and emphasises the competencies that are characteristic of leadership in administrative units, ministries, directorates and government agencies (Stare, 2009; Stare & Seljak, 2013).

In most developed countries, health care systems are a part of the public sector, both in terms of providers and in terms of funding; however, the private sector is gaining significance in the field of health care. Nevertheless, we

can assume that in the future the public sector will remain dominant in the field of health care due to the importance of public health, particularly in the countries of the European Union. Consequently, the majority of nurses will be influenced by factors that are influencing other public employees. The competency model of leadership in nursing is composed from the part that is the same for all leaders working in public administration and from the part that is specific for nurse leaders. This would halt the excessive growth in the number of different competency models while preserving the diversity required by the specificity of the individual group. Another fundamental advantage of a model of this type is that it is possible to compare the level of competencies and competency profiles of leaders in different groups and in this way obtain additional information both about the difficulties of leadership in individual fields and an assessment of leadership training needs.

The basis for the nursing profession and nurses' knowledge is a good educational system that must be supplemented with continuing education and training (CET) following graduation and should be provided by professional associations and health care organisations (Yoder-Wise & Brigher, 2007). Nurses must accept learning and training as an integral part of their profession. Nurse CET, nurse experience and nurse professional development play a significant role in the evaluation of nurse competence (Kvas and Seljak, 2013). This is particularly true of nurse leaders, who bear the responsibility for the good leadership of this professional group. In the course of her career, each nurse assumes various leadership roles. CET comprising leadership is therefore a key part of a nurse's career development and must begin immediately after graduation and continue systematically throughout a nurse's career (Yoder-Wise & Brigher, 2007; Kvas & Seljak, 2013).

The content, scope and forms of CET are determined by professional associations (ICN, 2009). Professional learning programmes in Slovenia are approved by the Nurses and Midwives Association of Slovenia (NMA). In addition to the NMA, CET programmes are also organised by health care organisations, civil associations (e.g. patients' associations) and providers of various contents related to nurses' work. Due to the variety of organisers, an accurate registry of the types and scopes of nurse CET in Slovenia does not exist.

However, health care organisations also play an important role in CET, for their task is to enable and encourage it. The correct selection, education and training of leaders who are capable of appropriately motivating their co-workers to achieve targets are key elements of the excellence, efficiency and effectiveness of every organisation. One of the key roles of leaders in health care organisations is to create a learning-friendly environment and to present knowledge as a virtue. Nurse leaders must set an example and possess knowledge of leadership, education and management (Kvas & Seljak, 2013).

The main objective of this paper is to assess training needs of leaders in nursing care. We were interested in (research questions):

- What are the differences between the competency profiles of leaders in state administration and nursing care?
- What are the differences between the competency profiles of the different levels of leaders in nursing care?
- What are the differences between the level of generic and role-specific competencies in nursing care?

On the basis of comparison of competency models, we assessed the training needs of leaders in nursing care. The competency-based approach could help identify what knowledge, skills, attitudes and behaviours are necessary for leaders in nursing care to successfully perform their roles in their organisation.

2 Methods

2.1 Research design

Slovenia belongs to the group of countries with a predominantly public health care system (WHO, 2013). Slovenia has 24 public hospitals (general hospitals, specialist hospitals and two university medical centres) and 64 public health centres, which in 2009 employed 84% of all graduate nurses, midwives and nurse assistants in Slovenia (Institute of Public Health, 2010). It is therefore also logical to use the state administration competency model for leaders in nursing care, although the model needs to be expanded to include the specific competencies characteristic of this field of work.

The competency model of leadership in nursing care is composed from the part that is the same for all leaders working in public administration and from the part that is specific for nurse leaders. The "Competency model for leaders in state administration" (Stare 2009; Kvas, 2013) covers 77 behaviours or actions that are divided into seven groups of competencies. We will call this group of competencies "Generic competencies". "Generic competencies" are also assumed to be characteristic of nursing care leaders, at least those working in the public sector.

On the basis of an analysis of leadership theory and competency models (Biesma et al., 2008; Delamare & Winterton, 2005) and secondary analysis of data from the research project carried out in Slovenia on a representative sample of nurses (Kvas, 2013), 18 nursing care specific behaviours were added to generic competencies. Three groups of competences characteristic of those in leadership positions in nursing were developed on their basis:

- Seven behaviours indicating ethical/unethical behaviour by nurse leaders were selected (ethics in nursing care).

Table 1. *Generic competencies and nursing care specific competencies for nurse leaders*

Competency	Characteristics	No of items
Generic leadership competencies		77
Flexibility at work	Rapid adaptation and orientation in a concrete problem situation. Involves having a good command of the area of work, effective use of resources currently available for high-quality provision of services and keeping control of the situation (e.g. resistance to stress).	13
Creativity	Ingenuity and adaptability in a new situation, going beyond the standard approach.	15
Leadership	The process whereby a leader influences people on the basis of his/her own competencies, through a characteristic approach, to (mutually) achieve (agreed) goals.	14
Organisational climate	Combined factors influencing the well-being, motivation and satisfaction of co-workers and customers (patients).	14
Organisation	Organisation of efficient work on the basis of knowledge of the organisation and functioning of public administration (health care system). Rapid but careful decision-making and efficient management of all available resources.	8
Networking and influencing	Establishment of connections with people and networks that have an influence on key decisions and drawing information on this basis. Ability to handle public relations and media relations and to speak in front of an audience. Being generally well-informed and keeping up to date with developments.	7
Realisation skills	Focus on achievement of goals. Ability to transform strategies into clear, reasonable (attainable) and operational goals. Persistence in overcoming difficulties and the ability to put own ideas into effect.	6
Nursing care specific competencies		18
Ethics of conduct	Priority is not given to relatives, acquaintances and colleagues, violations of nursing regulations are reported, patient privacy is protected, patient is informed about nursing activities.	7
Interprofessional relationships	Cooperation and communication with doctors on equal footing, differentiation between nursing and medicine, knowledge of nursing and its role in the health care system, taking responsibility for the sphere of nursing in the health care team.	5
Positive attitude towards knowledge and education	Knowledge of work in the management and economics/business fields, ability to communicate in foreign languages, knowledge of work with new technologies, knowledge of quality standards, encouraging education of co-workers.	6
All competencies		95

- Five behaviours were selected indicating a correct understanding of the position of nurses in the health care system and their relationship with doctors (inter-professional relationships).
- Six behaviours indicating the attitude of nurse leaders to the education of their subordinates and their own education were selected (positive attitude of leaders towards knowledge and education).

The questionnaire contained a total of 95 items organised into ten groups or competences (Table 1). Respondents indicated to what extent each of 95 different behaviours or actions was characteristic of a person at their leadership level. They used a five-point scale, from 1: com-

pletely uncharacteristic behaviour, to 5: decisive behaviour. Respondents did not describe the actual situation (how they behave or should behave) but instead what behaviour should be characteristic of a person at their leadership level.

2.2 Sample and methods of data collection

The survey was carried out at the Congress of Nursing and Midwifery of Slovenia in May 2009. The congress is a special form of expert work of the Nurses and Midwives Association of Slovenia, where expert recommendations for the development of the nursing and midwifery profession are presented. A total of 250 questionnaires were distributed

Table 2. Demographic data on the sample of nurse leaders.

		Number	%
Gender	Female	134	95.0
	Male	7	5.0
Age (years)	21 to 30	10	7.1
	31 to 40	45	31.9
	41 to 50	62	44.0
	51 to 60	21	14.9
	N/A ^b	3	2.1
Education	Three-year higher education	20	14.2
	Professional college	87	61.7
	Bachelor's degree or higher	33	23.4
	N/A ^b	1	0.7
Leadership level ^a	First level	42	29.8
	Second level	57	40.4
	Third level	41	29.1
	N/A ^b	1	0.7
Total		141	100.0

^a First leadership level: head nurses of hospitals/clinics, assistant directors of nursing.

Second leadership level: Leaders of wards, clinical departments, operational blocks, hospital units, outpatients' clinic groups, hospital centres.

Third leadership level: team leaders, senior nurses, small department heads.

^b N/A: no answer.

to the participants in the Congress, with 141 nurse leaders (56.4%) returning completed questionnaires (Table 2).

2.3 Statistical analysis

The data was analysed using SPSS 19.0. Descriptive statistics were used to describe the sample. Based on the results for individual behaviours, a simple arithmetic mean was used to calculate values for 10 competencies. Internal consistency was examined using the Cronbach's alpha. Factor Analysis was used to determine the construct validity (Rattray & Jones, 2007). In the factor analysis, principal component analysis with varimax rotations was used to examine which factors of the scale comprised coherent groups of items (Blaikie, 2003). The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were applied to measure sampling adequacy (Munro, 2005; Lin et al., 2010). Relationships between variables were analysed using one-way analysis of variance (ANOVA). A significance level of $\alpha = 0.05$ was used for all statistical tests.

We compared the competency model for nurse leaders with the competency model for the group of leaders in the civilian part of the state administration. Due to different variability within individual groups of leaders, we standardised the values. Relations between norms are formulated on the basis of the relations between the minimum and maximum values. For competency model for nurse leader and competency model for leaders in state administration, we obtained a comparative evaluation scale – the values of the norms range between 3.2 and 5.0 for both groups. We defined 3.2 as the lowest possible norm (55% of the value of the highest score) and 5 as the highest norm (100% of the value of the score) (Kvas, 2013). The calculated values can be directly compared between the two models.

2.4 Ethical consideration

The study was approved by the Honorary Court of Arbitration of the Nurses and Midwives Association of Slovenia. Participants were assured that there was no risk

from participating in the study and that their responses would be treated confidentially.

3 Results

The reliability of the measuring instrument was assessed for each of the ten competencies. Cronbach's alpha was

between 0.76 and 0.93. The value indicated a high level of reliability of the measuring instrument.

Factor Analysis was applied to determine the construct validity for each of the ten competencies. The KMO measure of sampling adequacy was between 0.72 and 0.94 and indicated that factor analysis was appropriate. Bartlett's test was significant (p -value less than 0.005). The Principal Component Analysis (PCA) method was applied to the

Table 3. Norms for the competency profiles for three leadership levels in nursing care and in state administration

	Leaders in nursing care ^a			Leaders in state administration ^b		
	Leadership level			Leadership level		
	First	Second	Third	First	Second	Third
All competencies (M±SD)	4.56±0.22	4.62±0.19	3.55±0.16			
Generic competencies (M±SD)	4.70±0.10	4.64±0.18	3.50±0.17	4.55±0.25	3.96±0.27	3.67±0.31
Flexibility at work	4.6	4.7	3.6	4.3	3.9	3.8
- Execution of procedures	4.5	4.6	3.8	4.3	3.9	3.9
- Communication	4.6	4.5	3.8	4.6	3.8	3.7
- Resistance to stress	4.6	4.8	3.4	4.1	3.9	3.9
Creativity	4.9	4.5	3.5	4.7	4.0	3.6
- Strategic thinking	4.9	4.3	3.4	4.8	4.3	3.3
- Openness to change	4.9	4.6	3.5	4.5	4.1	3.7
- Use of effective methods	4.6	4.6	3.6	4.9	3.7	3.6
Leadership	4.8	4.8	3.5	4.2	4.0	3.8
- Responsibility	4.8	4.7	3.7	4.1	3.8	4.1
- Animation	4.7	4.9	3.4	4.3	4.3	3.6
Organisational climate	4.6	5.0	3.4	4.5	3.7	4.0
- Relations with co-workers	4.6	5.0	3.5	4.5	3.6	4.1
- Dealing with customers	4.4	4.8	3.5	4.5	3.7	3.9
Organisation	4.7	4.5	3.5	4.5	3.5	4.1
Networking and influencing	4.6	4.5	3.2	4.7	4.3	3.3
Realisation skills	4.7	4.5	3.8	5.0	4.3	3.2
Nursing care specific competencies (M±SD)	4.23±0.26	4.57±0.12	3.67±0.04			
Ethics	3.9	4.6	3.7			
Interprofessional relationship	4.4	4.7	3.6			
Positive attitude towards knowledge and education	4.4	4.4	3.7			
Comparison of generic and role-specific competencies						
F-test	14.8	0.3	2.3			
Sig.	0.005	0.574	0.171			

Source: ^a our research; ^b Stare, 2009; Kvas et al., 2013.

extraction of components. According to Kaiser criterion, only the factors that have eigenvalues greater than one are retained. Between one and three factors were extracted from the five to 15 leadership behaviours (items), which accounted for 51.7 % to 72.7 % of variability. Varimax rotation was applied in order to optimise the loading factor of each item on the extracted components. All of the factor loadings were greater than 0.40 (between 0.44 and 0.88). This indicates good construct validity.

The values of the competency norms for nurse leaders and leaders in the civilian part of the state administration are shown in Table 3. The required levels of competencies in the case of the highest nurse leaders were 4.7 on average, which was slightly higher than for leaders in state administration (4.55). According to the scores of the respondents, the most important competencies for leaders at the first leadership level in nursing care are from the following areas:

- Creativity (4.9). In nursing care, leaders apparently think more strategically and are more open to change than those in state administration, while use of effective methods is considerably lower than that of leaders in state administration.
- Leadership (4.8). Within this competency, the competence dimension of responsibility was 0.6 higher and the competency dimension of animation 0.4 higher than in the case of leaders in state administration.
- Leaders in nursing care are also said to have significantly higher norms than leaders in state administration in the field of flexibility at work, particularly with regard to the competency dimension of resistance to stress (0.5).

The average of the seven competencies for second-level leaders in state administration is 3.96, while for leaders in nursing care it is 4.64. The norms for the second leadership level in nursing care are significantly higher.

In nursing care, the most important competencies for leaders at the second level are from the following areas:

- organisational climate, in particular the competency dimension of relations with co-workers (5);
- leadership, in particular the competency dimension of animation (4.9);
- resistance to stress (4.7) and
- interprofessional relationships (4.7).

A comparison of the third leadership level shows that this is the area where norms in state administration are higher (average value 3.67) than norms in nursing care (3.50).

The analysis of differences between the leadership levels in nursing care was carried out using the basic values and clearly shows that norms differ among the three leadership levels (ANOVA). Statistically significant differences between groups appeared in all observed fields except education. We can see, however, from the arithmetic means that a deviation from the other two groups was particularly

marked in the case of nurses at the third leadership level. We therefore verified the differences between each pair of leadership levels. The test showed (Post hoc test – Tukey's Honestly Significant Differences test) that no statistically significant differences can be seen between the first and second leadership levels in nursing care in any of the observed fields. Leaders at the third leadership level, however, show lower norms in the majority of competencies than the other two groups of leaders ($p < 0.05$). The lowest norms at the third leadership level are in the field of networking and influencing (3.2), while the highest are in the areas of realisation skills (3.8) and flexibility at work, in particular the competence dimensions of execution of procedures and communication (3.8).

Finally, we verified whether the level of norms for generic competencies differs from the three role-specific competencies for leadership in nursing care (Table 3). The average for the first seven generic competencies was statistically significantly higher among leaders at the first leadership level (4.70) than for the last three role-specific competencies (4.23) (ANOVA, F-test=14.8, $p < 0.005$). Among leaders at the second level of leadership, there were almost no differences (ANOVA, F-test=0.3, $p = 0.574$). Among the third group, generic competencies of leaders in public administration are less important than competencies that are supposed to be characteristic of leaders in nursing care (although not statistically significant, ANOVA, F-test=2.3, $p = 0.171$).

On the basis of competence model, we can assess training needs for nurse leaders. The assessment is even better if we can compare it with the competence models for leaders in other professions. A comparison of models formulated in this way enables easier identification of the training needs of individual groups of leaders. On the basis of a comparison of competency profiles, we can evaluate the areas in which training needs are greatest for an individual professional group. For nurse leaders, we have formulated a training needs assessment (Table 4):

- with regard to the level of norms in the leadership competency model in nursing care, and
- with regard to differences between norms in the leadership competency model in nursing care and in state administration.

4 Discussion

Leaders at the first leadership level need additional training in the competency areas of resistance to stress, strategic thinking, openness to change, positive attitude towards education and interprofessional relationships. They have to perform tasks that require a high level of strategic thinking and openness to change. They have to bear all the responsibility for their decisions and be able to cope with stressful situations. The most important role-specific competencies for the

Table 4. Training needs assessment for nurse leaders^a

	Leadership level		
	First	Second	Third
Flexibility at work			
- Execution of procedures			*
- Communication			*
- Resistance to stress	*		
Creativity			
- Strategic thinking	*		
- Openness to change	*		
- Use of effective methods			
Leadership			
- Responsibility	*		
- Animation		*	
Organisational climate			
- Relations with co-workers		*	
- Dealing with customers		*	
Organisation			
Networking and influencing			
Realisation skills			*
Ethics			*
Interprofessional relationship	*	*	
Positive attitude towards knowledge and education	*		*

Note: ^a areas in which additional training is necessary.

first leadership level are a positive attitude towards education and good interprofessional relationships (Fukurawa & Cunha, 2011; Spicer et al., 2011). The results of our research show that the similarity of competency norms in state administration and nursing care is greatest at this leadership level. Among this group of leaders, the “classic” competencies of leaders in public administration predominate, while there are fewer characteristics of leaders in nursing care. First level nurse leaders represent a nursing profession in the top management of health care and other organisations. Communications of first level nurse leaders with other leaders are frequent both inside and outside of the organisation.

Leaders at the second leadership level need additional training in the competency areas of animation, relations with co-workers, dealing with customers and interprofessional relationships. They typically have the most relationships with different groups of people – they have an intermediary role between the first and third leadership levels, they coordinate activities with other professional groups in health care and they are also responsible to a large extent for com-

munication with patients. Leaders at this level lead relatively large groups of co-workers, although they only participate to a small extent in the actual provision of nursing (Lin et al., 2005; McCarthy and Fitzpatrick, 2009).

Leaders at the third leadership level need additional training in the competency areas of realisation skills, execution of procedures, communication, ethics and positive attitude towards education. They are strongly involved in the actual process of providing nursing care. This points to the fact that leaders at the lowest leadership level are torn between the actual provision of nursing care and leadership and are not prepared to fully accept the role of leaders (Twedell and Jackson Gray, 2007). This leadership level is in fact a link between other nurses and leaders and plays an important role at the start of the career of every nurse (communication, positive attitude towards education and ethics). Nurse leaders even at the lowest leadership level should be aware of the importance of their role as leaders and should be building up their professional identity, which should already have formed during their time as students.

Some limitations in the research should be pointed out. First, the relatively low response rate (56.4%). Second, the discussed findings and implications were obtained from two studies with two different samples and in two different years; generalising the results of comparison should be done with caution. Third, the competency approach is a relatively new concept of leadership. Although it is widely accepted, the opinion exists that the competency approach is not a good way of selecting, measuring and developing leaders and more consideration should be placed on reflection, discussion and experience (Bolden & Gosling, 2006) and on the practical side of leadership (Carroll et al., 2009).

5 Conclusion

In our research, training needs assessments were done for three leadership levels in nursing care on the basis of differences between competency profiles of leaders in state administration and nursing care, competency profiles of the different levels of leaders in nursing care and level of generic and role-specific competencies in nursing care. Nurses are a professional group bound to lifelong education due to the characteristics of their profession as well as legal requirements. It is an essential task of both professional associations and the educational system for health care to equip nurses with leadership knowledge, for only those professional groups with adequate leadership can be successful.

Professional associations that have the necessary infrastructure and conditions should prepare appropriate CET programmes. The training of leaders is particularly important for they are a part of the leadership structure in health care organisations and have the ability to influence and change the organisational culture. Emphasis should be placed on interdisciplinary programmes that would ensure the training of independent and broad-minded nurses. CET programmes should be organised for each leadership level in nursing. The greatest need for training can be observed at the third leadership level. Special training programmes should be organised in the competency areas of realisation skills, execution of procedures, communication, education and ethics.

A long-term solution would be to introduce additional courses on leadership in higher education programmes for nurses. The level required for competencies at the lowest leadership levels in health care needs to be significantly increased, since this would ease the transition between different leadership levels in health care and increase the number of potential candidates for middle and higher leadership positions.

References

- Biesma, G. R., Pavlova, M., Vaatsra, R., Van Merode, G. G., Czabanowska, K., Smith, T., et al. (2008). Generic Versus Specific Competencies of Entry-Level Public Health Graduates: Employers' Perceptions in Poland, the UK, and the Netherlands. *Advances in Health Sciences Education*, 13(3), 325–343, <http://dx.doi.org/10.1007/s10459-006-9044-0>
- Blaikie, N. (2003). *Analyzing Quantitative Data: From Description to Explanation*. London: SAGE Publications.
- Bolden, R. (2004). *What is Leadership?* Exeter: University of Exeter.
- Bolden, R., & Gosling, J. (2006). Leadership Competencies: Time to Change the Tune. *Leadership*, 2(2), 147–163, <http://dx.doi.org/10.1177/1742715006062932>
- Boyatzis, R. E. (2008). Competencies in the 21st century. *Journal of Management Development*, 27(1), 5–12, <http://dx.doi.org/10.1108/02621710810840730>
- Brooks, I. (2003). Systemic Exchange: Responsibility for Angst. *Organisation Studies*, 24(1), 125–141, <http://dx.doi.org/10.1177/0170840603024001682>
- Carroll, C., Booth, A., Papaioannou, D., Sutton, A. & Wong, R. (2009). UK health-care professionals' experience of on-line learning techniques: A systematic review of qualitative data. *Journal of Continuing Education in the Health Professions*, 29(4), 235–241, <http://dx.doi.org/10.1002/chp.20041>
- Cook, L. K., Cox, J. C., & Henning, E. S. (2008). Breaking the Boundaries: Standardisation of a Competency Assessment Model for All Clinical Disciplines. *Nurse Leader*, 6(3), 34–40, <http://dx.doi.org/10.1016/j.mnl.2008.04.002>
- Delamare Le Deist, F. & Winterton, J. (2005). What Is Competence? *Human Resource Development International*, 8(1), 27–46, <http://dx.doi.org/10.1080/1367886042000338227>
- Dimovski, V., Marič, M., Uhan, M., Đurica, N. & Ferjan, M. (2012). Sun Tzu's "The Art of War" and Implications for Leadership: Theoretical Discussion. *Organizacija*, 45(4), 151–158, <http://dx.doi.org/10.2478/v10051-012-0017-1>
- Engel, C. (2002). Common Assessment Framework: The state of affairs. *Eipascope*, 11(1), 35–39.
- European Foundation for Quality Management (EFQM). (2013). *The EFQM Excellence Model Fundamental Concepts*. Retrieved 7 December 2013, from <http://www2.efqm.org/en/Home/TheEFQMExcellenceModel/FundamentalConcepts/tabid/169/Default.aspx>
- European Institute of Public Administration (EIPA), Resource Centre. (2012). *CAF 2013*. Maastricht: European Institute of Public Administration.
- Furukawa, P. d. O. & Cunha, I. C. K. O. (2011). Profile and competencies of nurse managers at accredited hospitals. *Revista Latino-Americana de Enfermagem*, 19, 106–114, <http://dx.doi.org/10.1590/S0104-11692011000100015>
- Institute of Public Health. (2010). *Health Statistics Yearbook 2010*. Ljubljana: Institute of Public Health of the Republic of Slovenia.
- International Council of Nurses (2009). *The role and identity of the regulator: an international comparative study*. Geneva: International Council of Nurses.
- Kvas, A. (2013). *Leadership Competency Model in Health Care*. Doctoral dissertation. Ljubljana: University of Ljubljana, Faculty of Administration.
- Kvas, A. & Seljak, J. (2013). Continuing Education and Self-Assessment of Knowledge of Nurse Leaders. *The Journal of Continuing Education in Nursing*, 44(8), 342–349, <http://dx.doi.org/10.3928/00220124-20130603-07>

- Kvas, A., Seljak, J. & Stare, J. (2013). The Use of Competency Models to Assess Leadership in Nursing. *Iranian Journal of Public Health*, 42(9), 988–995.
- Lin, C.-J., Hsu, C.-H., Li, T.-C., Mathers, N., & Huang Y.-C. (2010). Measuring professional competency of public health nurses: development of a scale and psychometric evaluation. *Journal of Clinical Nursing*, 19(21-22), 3161–3170, <http://dx.doi.org/10.1111/j.1365-2702.2009.03149.x>
- Lin, L.-M., Wu, J.-H. & White, L. P. (2005). Managerial Activities and Skills of Nurse Managers: An Exploratory Study. *Hospital Topics*, 83(2), 2-9, <http://dx.doi.org/10.3200/htps.83.2.2-9>
- Marulc, E. & Devetak, G. (2013). The Impact of the Intellectual Charm of Physicians on the Healthcare Organisations. *Organizacija*, 46(1), 29-41, <http://dx.doi.org/10.2478/orga-2013-0004>
- McCarthy, G., & Fitzpatrick, J. J. (2009). Development of a Competency Framework for Nurse Managers in Ireland. *The Journal of Continuing Education in Nursing*, 40(8), 346-350, <http://dx.doi.org/10.3928/00220124-20090723-01>
- Muehlbacher, J., Kovač, J., Novotny, A. & Putnová, A. (2013). Competency Management in Central Europe: A Comparison of Czech, Hungarian and Slovenian Competency Needs. *Organizacija*, 46(5), <http://dx.doi.org/10.2478/orga-2013-0019>
- Munro, H. B. (2005). *Statistical Methods for Health Care Research, Fifth edition*. Philadelphia: Lippincott Williams & Wilkins.
- Northouse, G. P. (2007). *Leadership - Theory and Practice*. Thousand Oaks: Sage.
- Organisation for Economic Co-operation and Development. (2001). *Public sector leadership for the 21st century*. Paris: OECD.
- Rattray, J. & Jones, M. C. (2007). Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, 16(2), 234–243, <http://dx.doi.org/10.1111/j.1365-2702.2006.01573.x>
- Sarkar, S. (2013). Competency based Training Need Assessment – Approach in Indian companies. *Organizacija*, 46(6), 253–263, <http://dx.doi.org/10.2478/orga-2013-0025>
- Spicer, J. G., Guo, Y., Liu, H., Hirsch, J., Zhao, H., Ma, W., et al. (2011). Importance of role competencies for Chinese directors of nursing based on the forces of magnetism. *Journal of Nursing Management*, 19(1), 153–159, <http://dx.doi.org/10.1111/j.1365-2834.2010.01182.x>
- Stare, J. (2009). Competency Models for Public Administration and Leadership Development. In M. Vintar & P. Pevcin (Eds.), *Contemporary Issues in Public Policy and Administrative Organisation in South East Europe* (pp. 262–276). Ljubljana: University of Ljubljana, Faculty of Administration.
- Stare, J. & Seljak, J. (2013). *Vodenje ljudi v upravi (2. ponatis) [Leadership in administration (2th edition)]*. Ljubljana: University of Ljubljana, Faculty of Administration
- Stefl, M. E. & Bontempo, C. A. (2008). Common Competencies for All Healthcare Managers: The Healthcare Leadership Alliance Model. *Journal of Healthcare Management*, 53(6), 360–373.
- Šparl, P., Žnidaršič, A., Kasper, H., Mühlbacher, J. & Kovač, J. (2013). Management Competencies and Organisational Performance in CEE: A Comparison of Slovenia and Austria. *Organizacija*, 46(5), 214–220, <http://dx.doi.org/10.2478/orga-2013-0022>
- Twedell, M. D. & Jackson Gray, J. (2007). Role Transition. In S. P. Yoder-Wise (Ed.), *Leading and Managing in Nursing* (pp. 515–529). St. Louis: Mosby – Elsevier.
- World Health Organisation. (2013). *Health expenditure ratios*. Retrieved 10 December 2013, from <http://apps.who.int/ghodata/?vid=1901>
- Yoder-Wise, S. P., & Brigher, A. S. (2007). Leading through professional associations. In S. P. Yoder-Wise (Ed.), *Leading and managing in nursing* (pp. 577–589). St. Louis: Mosby – Elsevier.

Andreja Kvas is a Senior Lecturer at the Faculty of Health Sciences, University of Ljubljana, Slovenia. She received her master's degree at the Faculty of Social Science and doctorate at the Faculty of Administration, University of Ljubljana. She is a vice-president of the Nurse and Midwifery Organisation of Ljubljana, responsible for the field of education, research and publishing. Her research interests include health care, education, public sector and leadership.

Janko Seljak is an Independent Researcher at the Faculty of Administration, University of Ljubljana, Slovenia. He received his master's degree and doctorate at the Faculty of Economics, University of Ljubljana. His research focuses on statistics, data envelopment analysis (DEA), performance indicators, public sector and health care.

Janez Stare is an Assistant Professor of Public Sector Organisation at the Faculty of Administration, University of Ljubljana, Slovenia. He holds a master's degree in HRM and a doctorate in leadership in public administration. His main research interests are current issues in human resources management, leadership and public sector organisation. He participates as a head or a member in a variety of projects (Innovative solutions for a better work environment, Leadership competence model for public administration). He is a member of The Officials Council of the Republic of Slovenia and a member of professional bodies of the Slovenian Association for Human Resource Management and Industrial Relations.

Primerjava kompetenčnih modelov vodenja kot osnova za izdelavo ocene potreb po usposabljanju za vodje v zdravstveni negi

Ozadje in namen: Glavni namen oblikovanja kompetenčnih modelov vodenja mora biti izboljšanje vodenja. Kompetenčne modele naj bi uporabljali kot eno od orodij za izbiro najprimernejših vodij, ocenjevanje njihovega dela, potreb po usposabljanju ter pripravo programov formalnega in neformalnega vseživljenjskega izobraževanja. Cilj naše

raziskave je oceniti potrebe po usposabljanju vodij v zdravstveni negi. Primerjava kompetenčnih modelov vodenja med različnimi profesionalnimi skupinami naj bi služila kot orodje za izdelavo ocene potreb po usposabljanju za različne ravni vodenja.

Metodologija: V okviru raziskave je bila izvedena anketa, v kateri je sodelovalo 141 vodij v zdravstveni negi. Anketirani vodje so ocenili do katere stopnje je 95 različnih ravnanj značilnih za osebo na njihovi ravni vodja.

Rezultati: Najpomembnejše kompetence (skupine ravnanj) za vodje v zdravstveni negi so (1) za najvišjo raven vodenja: strateško mišljenje, odprtost za novosti in odgovornost; (2) za drugo raven vodenja: medsebojni odnosi, animacija, odpornost na stres; (3) za tretjo raven vodenja realizatorske sposobnosti, izvedba postopkov, komunikacija. Ocenili smo potrebe po usposabljanju na treh ravneh vodenja v zdravstveni negi.

Zaključki: Največje potrebe po usposabljanju je opaziti na tretji ravni vodenja v zdravstveni negi. Posebne programe usposabljanja je potrebno organizirati na kompetenčnih področjih realizatorskih sposobnosti, uporabe učinkovitih metod, komuniciranja, izobraževanja in etike.

Ključne besede: Kompetence, zdravstvena nega, vodenje, javna uprava, Slovenija