

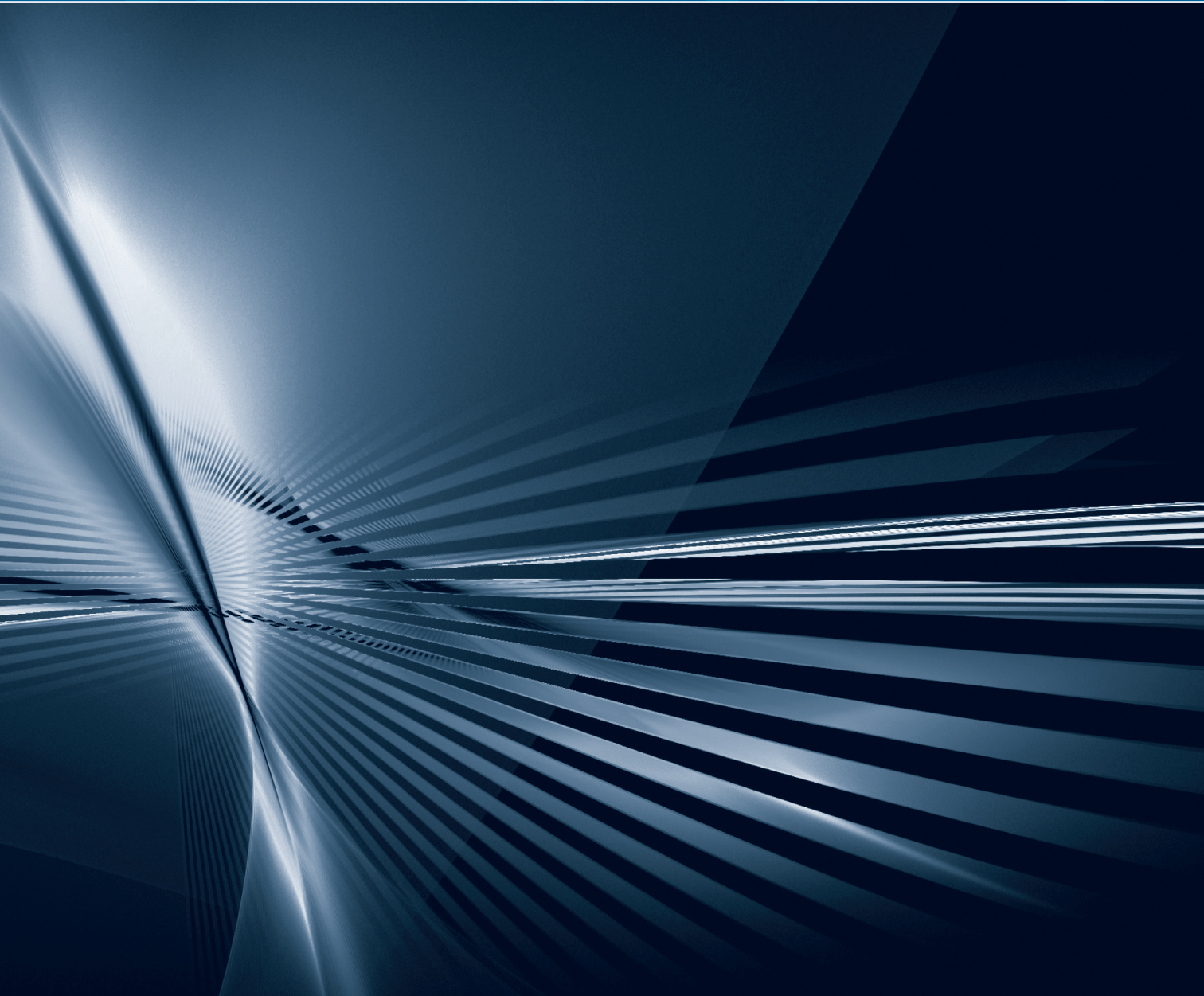
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ORGANIZACIJA

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In Memoriam

In recent weeks, three of our esteemed colleagues, scientists, and teachers have passed away. It was with great sadness that we received the news that we had lost respected professors and researchers in the international and domestic environment in the field of organization and management.

Associate Professor **Metod Černetič**, has graduated from the Faculty of Arts of the University of Ljubljana with a major in sociology. He earned his master's degree in 1984 at the Faculty of Social Sciences of the University of Ljubljana. In 1998, he successfully defended his doctoral dissertation titled "Heuristic approach in planning postgraduate studies of personnel development in RD – with a focus on Slovenia" at the Faculty of Organizational Sciences of the University of Maribor.

As an associate lecturer in organizational sociology, he started to teach in 1972 at the College of Organizational Sciences. In 1975, he became full-time employee and was first a college lecturer at the newly established Faculty of Organizational Science, later a college professor, senior lecturer, assistant professor in the field of organization and education in personnel management, and, finally, in the title of associate professor for organization and education in personnel management.

In 1994–1996, Prof. Černetič attended further advanced scientific studies in the framework of the Tempus programme, at national and international scientific and professional congresses, conferences, symposia, and panel discussions as a researcher as well as a participant in different research projects.

His scientific activity was as versatile as comprehensive – from organizational management (above all, the sociological aspects of organizational relationships), contemporary forms and approaches in organizing enterprises and other institutional forms (management of non-profit organizations), human resource and entrepreneurship development, development of postgraduate studies (young researchers), to the economics of education and research. He has worked on many research projects and programmes in the fields of the development of higher education, the development of postgraduate study, and the theory of organization and management.

Prof. Metod Černetič was actively participating in work of Slovenian Sociological Association and Society for Evaluation and Organizational Development. He was a holder of the Organizational Chair, president of the

programme and organizational committee of the alumni meetings, member of the expert group for School of Management curricula preparation, and lecturer. Engaged by Slovenian Chamber of Commerce and Industry, he was lecturing managers and directors. He was a member of many educational and research centres and institutions.

His pedagogical, professional, and research approach has left an essential imprint on the development of the Faculty of Organizational Sciences at the University of Maribor. Prof. Metod Černetič will remain in fond remembrance.

Dane Melave, Professor Emeritus at the University of Maribor, Faculty of Economics and Business, was born on July 17, 1932, in Mozirje, Slovenia. After completing his undergraduate studies in 1956 at the University of Ljubljana, Faculty of Economics, he continued his study at the University of Zagreb, Faculty of Economics and received his master's degree in 1972 and his doctoral degree in 1974. The title of his thesis was "Transformation of accounting in its incorporation into the business information system of the company".

In 1957, he started his professional career in the Nazarje Forestry in accounting, finance, and management. From 1967 to 1972, he worked as an independent consultant at the Development Center in Celje.

During his employment in the industry, he started pedagogical work in higher education. In 1970, he became Associate Lecturer of Cost Accounting and Accounting at the Faculty of Economics and Business (EPF), University of Maribor. In 1972, he joined the same faculty as a college professor of bookkeeping. After completing doctoral studies, he was elected Assistant Professor for Accounting, and in 1975, Associate Professor. He was elected full professor of Accounting and Economics in 1980.

In addition to teaching and research, Prof Melave worked on the development and the establishment of other fields, important for the progress of the faculty. From 1978 to 1989, he was the editor-in-chief of the magazine 'Our Economy' (Naše gospodarstvo). From 1973 to 1976, he was the head of the Institute of Finance and Banking at the EPF. In 1977, he became vice-dean, and from 1979 to 1983, dean of the EPF. The accomplishments of his work undoubtedly contributed to the trust of the academic community, and in 1983-1987, he was able to confirm his work as rector of the University of Maribor. From 1986 to 1987, he was president of the Presidency of Yugoslav universi-

ties. He also left a significant mark in the Slovenian higher education area by acting as president of the Higher Education Council (his last appointment ended in 2002).

In December 1992, he retired after completing four decades of working life. In 1994, he was awarded the title of Professor Emeritus at the University of Maribor and received the title Honorary Senator in 2000.

A comprehensive bibliography demonstrates the achievements of his fundamental research. Throughout his career, he published 35 books (23 in co-authorship), and 233 journal articles and conference papers. More than 30 articles were written on the basis of invitations from Slovenia and abroad. He presented his work at numerous conferences in a range of countries.

Prof Melavc published several textbooks for undergraduate, graduate, and postgraduate studies and for supplementary education. His publications cover a wide range of topics, from organizing accounting for the needs of various related organizations, through the significance of contemporary methods of cost and managerial accounting, to the integration of accounting and non-financial information, to mention only a few.

In addition to teaching at his home university, he lectured at the Johannes Kepler University in Linz, Austria and Hochschule für Ökonomie Bruno Leuschner in Berlin and at other several faculties in Slovenia, including the Faculty of Organizational Sciences in Kranj.

His publications significantly impacted the development of the accounting profession in Slovenia and in former Yugoslavia.

Among his monographs, we must highlight the book 'Introduction to the Theory and Technique of Accounting', which represented, according to reviewers Prof. Ivan Turk and Prof. Radmila Nikolajević, 'a novelty in the literature on the foundations of accounting in the Slovenian language'. This initial work subsequently underwent many revisions and supplemented editions, including editions in co-authorship with Prof. Ivan Turk. The first edition of his fundamental book in the area of managerial economics was published in 1977 and was followed by several revised and updated editions. The last edition, entitled 'How to Manage', was published in 2000. Several books on controlling and auditing and management and accounting followed, some of them in co-authorship. In 2016, he published the textbook of Accounting Basics, in co-authorship with his colleagues from the Accounting and Auditing Chair at the EPF.

Prof. Melavc's main research achievements can be summarized as follows:

- developing modern accounting as a whole of analytical and synthetic financial statements,
- developing management-managerial economics with a special emphasis on cost theory (the original definition of the causes of the creation of a limited fixed cost),
- linked treatment of productivity, economy, profitability, and monetary indicators,

- related treatment of accounting and modern informatics, and

- addressing the issues of higher education, in particular, the development of an appropriate information system.

Prof Dane Melavc transferred his knowledge and experience to the students as a committed pedagogue, and many will remember him as an excellent mentor. He supervised nine PhDs, many master and specialist theses, and numerous student assignments. Throughout his career, he was in contact with organizational practice by participating in numerous projects and consultations for various types of organizations, dealing with the organization of their accounting and with other areas of accounting and economics.

For his long-standing work in the field of accounting, Prof. Dane Melavc received many awards, such as the Gold Badge of the Federation of Accountants and Financial Workers of Slovenia. The Slovenian Association of Economists awarded him the status of the Expert for leadership and management areas, and the Ministry of Finance issued him the status of Certified Auditor.

Finally, we must emphasize that the work of the esteemed Prof. Dane Melavc was always permeated with honesty and a positive attitude, with refinement, and above all with a respectful attitude towards everyone and with his willingness to help. All of us who had the honour to work with Prof Melavc will remember him with great respect – as a teacher, mentor and co-worker, and primarily as an upright man.

Prof. **Jure Kovač** was born in Celje on July 27, 1959. He studied organization, sociology and economy. In 1985, he joined the Faculty of Organizational Sciences as a researcher and was engaged in research projects 'Robotization in the Republic Slovenia' and 'Integration of Information Technology into the Slovenian Machine-Processing Industry'.

Between 1986 and 1988, he was an independent consultant working for the Chamber of Commerce, engaged in the organization and implementation of the education of industry managers in the Republic of Slovenia, in particular in the transfer of managerial knowledge into the business practice of economic entities. In the next few years, he was the head of the Department of Organization, responsible for the implementation of strategic management into the company Konus. Between 1991 and 1993, he was the general manager of the company Aero Celje. Between 1993 and 1995, he worked as a young researcher at the Faculty of Economics and Business at the University of Maribor, participating in several research projects. In 1995, he received a PhD at the same faculty with the dissertation 'Implementing a Company's Strategy by Project Mode'. In the same year, he joined the team of the Faculty of Organizational Sciences at the University of Maribor.

Throughout his academic career, he was teaching courses related to organization and management to un-

dergraduate and postgraduate and doctoral studies. At the Faculty, among other things, he was the Head of the Chair for Organization and Management, in one of the past mandates, he was the Vice-Dean for Development. For a long time, he was a member of the Senate of the University of Maribor or Senator of the Faculty of Organizational Science. He managed the accreditation project for the joint study programme with the Faculty of Health Sciences at the University of Maribor.

He was a member of numerous scientific and professional associations, foundations and editorial boards both at home and abroad, and a member of many programme and organizing committees of the international and national conferences.

Through applied research, training and education of managers, Prof Jure Kovač gained understanding of the problems in practice, studied them and – in cooperation with the professionals from industry – proposed solutions that were implemented in various environments. Investigating cases from practice and relating them to the theory resulted in outstanding publications which significantly contributed to the theoretical and practical knowledge in the field of organization and management. As it is evident from his bibliography, he researched, in particular, the connection of strategies, projects, networks, and leadership related to the trust and values of the organization and its coordinated change in the direction of development. Among other subjects, he investigated transition processes in former Eastern European countries, new forms of organization and change management models, the importance and role of trust in an organization, strategic management and implementation of the company's strategy through project management. Numerous international and domestic awards and recognitions that he has received confirm his research success.

Around 1990, at the beginning of the economic and political transition, he was the initiator of the first comprehensive book on management in the Slovenian language. The book was published in the co-authorship of three authors and for years served as a basic textbook in the field of management. In terms of content, it was comparable to US textbooks of that time. In 2012, he co-authored a new, more comprehensive work 'Sodobne teorije organizacije' (Contemporary Theories of Organization), which built on the foundations of a modern organizational theory that separates the organizations from communities and views managerial functions from a different aspect. His last book, co-authored by two experts in health care, entitled 'Management in health organizations', will be published this spring.

Prof Kovač was a founding member and member of the Executive Board of the society Slovenian Academy of Management. He became editor and later a member of the editorial board of the magazine 'Izzivi managementa' (Management Challenges), published by the same academy. He was a member of the Editorial Boards of the in-

ternational journals 'Dynamic Relationships Management Journal' and 'Journal of East European Management Studies'. In particular, he was a very active member of the Editorial Board of the journal 'Organizacija', always ready to help the editors with his broad overview of the research and practice in the area of organization and management, and with his sound judgement of the relevance of texts submitted for publication. Editors of 'Organizacija' highly appreciate his advice and his contribution to the development and quality of the journal. His sudden farewell, at the peak of his teaching, research and advisory work, is a great loss for the journal.

Prof Jure Kovač shared his knowledge and scientific openness with an excellent pedagogical approach, which he unselfishly transferred to his colleagues and students. He was a respected teacher, researcher, mentor, co-worker, and a professor who was able to listen to everyone who turned to him and help with his ideas and solutions.

We will remember him as an excellent researcher, teacher, adviser, and colleague with a serious character, and still with somewhat hidden serenity and humour, which he was always able to express in his own way. All of us who have known him and have had the opportunity to work with him will keep him in our lasting memory.

Polona Šprajc, Majda Kokotec Novak, Bojana Korošec, Iztok Podbregar

Knowledge-based HR Practices and Innovation in SMEs

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Background and purpose: Recent reviews of the human resource management (HRM) literature continue to position knowledge management and intellectual capital as the key determinants for competitiveness, productivity and organizational performance. This article explores the nexus between knowledge-based HRM practices, knowledge management capacity, intellectual capital, product and process innovation in small and medium-sized enterprises (SMEs).

Design/Methodology/Approach: Data were gleaned from 250 registered SMEs in Jordan using a simple random sampling technique. A covariance structural equation modelling (CB-SEM) was deployed in testing the proposed research model.

Results: The findings cast light on the positive influence of knowledge-based HRM practice of SMEs on SMEs knowledge management capacity, intellectual capital and, product and process innovation. Similarly, knowledge management capacity SMEs exerts positive impact on their intellectual capital and, product and process innovation. Intellectual capital also emerges as a strong predictor for SMEs product and process innovation. Finally, a serial indirect effect (mediation) of knowledge management capacity and intellectual capital on the relationship between knowledge-based HRM practice of SMEs and, product and process innovation were revealed.

Conclusion: Knowledge-based HRM practices and innovation have received vast amount of research attention, yet there is a lack of understanding on the process by which the former leads to the latter. Drawing on knowledge-based view (KBV) theory, this study is among the first attempts to unveil the structural process between knowledge-based HRM practices and innovation through knowledge management capacity and intellectual capital. This study theoretically validated the KBV framework in a non-Western context and demonstrate the importance of knowledge-based HRM practices for SMEs innovativeness. The findings do not only provide useful insights for managers and scholars, but also serve as the building block for future research.

Keywords: *HR Practices; intellectual capital; product innovation; process innovation; knowledge capacity*

1 Introduction

Human resource management contributes greatly to attracting talented individuals to organization even at the face of increasing competition from both the global economy and knowledge economy. Hence, understanding HRM may prove to be more than significant in enticing, selecting, positioning, retaining and transforming valuable human resource in creating innovative process and products. Knowledge-based human resource practice involves functions and activities that ensures identification

and recruitment of talented individuals with specific potentials that can be harnessed to enhance organizational competitiveness through knowledge management capacity improvement. According to Martinez-Conesa, Soto-Acosta and Carayannis (2017), firms including small and medium-sized enterprises (SMEs) are nowadays depending more on external information and joint efforts to gain competitive advantage through innovation that can enable them to compete globally (Martinez-Conesa et al., 2017; Soto-Acosta, Popa, & Palacios-Marqués, 2017). Collaborative networks with external firms has been identified as a

main conduit to channel information and benefit from their new expertise, skills and technologies (Huggins & Thompson, 2015; Petruzzelli, 2011).

Specifically, when SMEs context is taken into consideration, sustainable competitiveness requires purposive inflows and outflows of knowledge due to the fact that SMEs face more severe resource constraints (Spithoven, Vanhaverbeke, & Roijakkers, 2013). In the same vein, innovation is also a function of knowledge capabilities of the organization. Beyond the influence of human resource management and knowledge management, intellectual capacity defined as ‘intellectual material – knowledge, information, experience, core technique, intellectual property, and customer relationship – that can be put to use to create wealth (Stewart, 1997) has also been shown in previous studies to influence firms’ innovativeness (Donate, Peña, & de Pablo, 2016; Manzaneque, Ramirez, & Diéguez-Soto, 2017; Yang, & Lin, 2009).

Organizations nowadays are beginning to realize the emergence of knowledge resource dominated society in which the competitive landscape is twitted by its intellectual capital allocation (Bontis, 2004). Scholars highlighted the move of power from tangibles to intangibles such as intellectual capital in creating organizations’ wealth and progress (Yang & Lin, 2009); thus, making intellectual capital a pivotal component of organizations’ lasting success. Several studies suggested that for innovation process to be functional, knowledge must be a definite input (e.g., Easterby-Smith, Lyles, & Tsang, 2008; Miller, Fern, & Cardinal, 2007; Perry-Smith & Mannucci, 2017; Rodan & Galunic, 2004; Singh, Kryscynski, Li, & Gopal, 2016). Hence, knowledge-based conditions such as knowledge-based HRM, knowledge management capacity of the firms and intellectual capital may be considered critical in responding to the business environment dynamics effectively.

This study is motivated by the scantiness of research on the role of HRM, intellectual capital and KMS in predicting innovation. With the exception of scholars like Jiang, Wang and Zhao (2012); Wang and Chen (2013) who investigated the interactions between intellectual capital and HRM on innovation; De Saá-Pérez and Diaz-Diaz (2010) who studied the influences of HRM on innovation argued that there has been dearth of empirical research in this domain. Prior findings suggested that innovation in firms is largely enabled by knowledge-based HRM practices (Inkinen, Kianto, & Vanhala, 2015; Kianto et al., 2017). What is lacking is an empirical evidence on the knowledge chain process; thus, the current research has some significant empirical contribution to the body of knowledge and practice by linking knowledge-based HRM practices, knowledge management capacity, intellectual capital and innovation in SMEs.

Scholars have sought to develop knowledge-based view or knowledge-based theory (KBV) of the firms mostly in Western firms. KBV abstractions are seeks to explain

how knowledge as a resource influences efficient production and offers competitive advantage. Prior studies have focused on the input and output dimensions omitting the underlying factors that helps in translating such practices into success (Abubakar et al., 2017; Jordão & Novas, 2017; Kianto et al., 2014; 2017). To expound the underlying dynamics, this paper contends and theoretically link knowledge-based HRM practices to knowledge accumulation, which is further transfer to employees, the accumulation of employee’s intellectual capital can interpret a firm’s ability in terms of innovation. With regards to context theoretical contribution, this paper expands the knowledge in literature on the interaction of HRM, knowledge management, intellectual capital and innovation in a non-Western context, technically interrogating theories and concepts developed in the Western World.

2 Literature review

Even though HRM dynamics are difficult to predict in the future, there are compelling indications that its practice and theory will be consistently metamorphose due to new technologies, globalization and fundamental changes in the workplace and nature of jobs. For instance, in Western countries, HRM practices have become an effective and efficient tool for achieving sustainable competitive advantage (Combs, Liu, Hall, & Ketchen, 2006). High performance HRM practices can create value for and to organizations (Sun & Pan, 2011). While, strategic HRM practices emphasize on developing no-tradeable, imperfectly imitable and durable people resources (Bamberger et al., 2014). Nonetheless, both approaches see HRM as a system by which people are directed and managed to achieve sustainable competitive advantage (Kehoe & Wright, 2013). According to Damodaran and Olphert (2000), knowledge management systems (KMS) are “information systems that are perceived to facilitate organizational learning by capturing both content and process knowledge and making these knowledge available to all employees” (pg.11). Abubakar et al. (2017) added that “knowledge management involves several elements like human resources practices, technology, culture and organizational structures; which makes it a meticulous approach toward the optimization of a firm’s knowledge economy as well as innovations” (pg.13). Implementation of KMS is not just a technological concern but also involve human factor (Shrafat, 2017). Which could be translated into knowledge-based HRM practices.

2.1 Knowledge-based human resource management (HRM) practices

Training and development, recruitment and selection, compensation and performance evaluation are the main determinants of organizational effectiveness (Delaney & Huselid, 1996). Knowledge-based HRM practices include HRM practices deliberately designed to improve organization's knowledge process. Managers need to modify the traditional HRM practices to improve knowledge creation and sharing in their organizations (Jahmani et al., 2018).

2.1.1 Knowledge-based recruitment

Recruitment "includes those activities carried out with the primary purpose of identifying and attracting potential employees i.e. human capital" (Breaugh & Starke, 2000, p. 45). It is important that recruiting officers should select employees not only based on their current skills, knowledge or experience but also based on the employees' potential. Jiang et al. (2012) opined that employees that have potentials are more inclined to learning, acquiring the knowledge or skills required for innovation. In a nutshell, knowledge-based recruitment embroils an explicit and strong emphasis on selecting candidates with pertinent networking, learning and knowledge capabilities.

2.1.2 Knowledge-based performance assessment

Performance assessment is a very important and relevant means of directing employee behavior. It is expedient that managers explicitly and consciously include performance criteria to knowledge process (knowledge creation, application and sharing) to enhance these processes. Performance evaluation emphasize feedback and development (Weisman, 1999), feedbacks help in identifying disparities between performance and targets (Shipton et al., 2006), as this will motivate employees to work innovatively (Jiang et al., 2012). Additionally, assessments that emphasize learning and growth will help employees in gaining the confidence required to harness the opportunities for better learning (Jiang et al., 2012). Concisely, knowledge-based performance assessments evaluate employees based on their contribution and involvement in improving the organization's knowledge process e.g., knowledge creation, sharing and application (Alavi & Leidner, 2001).

2.1.3 Knowledge-based training

Robbins, Judge and Campbell (2010) revealed that it is not possible for competent employees to remain competent forever as skills often depreciate and become passé. De-

signing and implementing training and development activities for employees will help in optimizing the fit between employees' requisite and present skills and knowledge which will improve the organization's human capital (Cabello-Medina et al., 2011) and contribute to the employees' knowledge creation abilities (De Winne & Sels, 2010). According to Lau and Ngo (2004), training will also enhance employees' work domain expertise as well as their creative thought process. To be concise, knowledge-based training and development entails regular development of employees' expertise and knowledge comprehensively, by personalizing training to fit employees' peculiar needs and ensuring a continuous development.

2.1.4 Knowledge-based compensation

According to Kianto et al. (2017), organizational compensation policies help in promoting knowledge management within the organization. Managers often use both intangible (such as recognition and status) and tangible incentives (such as one-off rewards and bonuses) to encourage knowledge sharing, creation and application among employees. Past research revealed that for employees to share, apply knowledge and create new ideas, incentive systems must be put in place like (Hussinki, Ritala, Vanhala, & Kianto, 2017; Inkinen et al., 2015; Kianto, Ritala, Spender, & Vanhala, 2014). This means that knowledge-based compensation is recompensing employees based on their contributions to the organization's key knowledge process involving knowledge creation, sharing and application.

2.1.5 Knowledge-based career management

Career management is a means of retaining and attracting high performing employees. Lewis and Arnold (2012) believed that high performing employees have higher opportunities within the organization. The major components of effective knowledge-based career management involve the use of support from top management, skill assessment activities, knowledge creation, sharing and application for career progression of the employees. In essence, knowledge-based career advancement is using new knowledge acquired from the organization's knowledge development program to help employees achieve their career goals and to improve the employees' productivity (Mahdavi, Mazdeh, & Hesamamiri, 2014).

3 Theoretical framework and hypotheses

3.1 Knowledge-based HRM practices and knowledge management capacity

In accordance with the tenets of knowledge-based theory (KBV), firms exist to create, integrate and utilize knowledge (Kogut & Zander, 2003; Nonaka & Takeuchi, 1995). Thus, knowledge is a crucial resource that ensures firms success and survival in complex and ambiguous environment that imitation rarely works (Subramaniam & Youndt, 2005; Zack, McKeen, & Singh, 2009). HR practices itself can be considered as a way of managing knowledge (Cabrera & Cabrera, 2005; Lin, 2011), thus, modern HR practices are required to encourage employees for knowledge generation and application. Yang and Lin (2009) suggested that organizations increase their knowledge capacity by employing the right kind of people. The strength of an organization's human capital is seen in the nature of investment organization is willing to commit to its hiring process. Knowledge-based HRM practices that seek individuals with right potential for knowledge development through effective knowledge-based hiring, recruiting and selection, training, and compensation will foster knowledge management capacity of a firm. Following this line of argument, the following hypothesis is formulated:

H1: Knowledge-based HRM practices has a positive impact on knowledge management capacity of SMEs

3.2 Knowledge-based HRM practices and intellectual capital

Knowledge-based HRM is concerned with creating and implementing knowledge driven policies, systems and procedures to motivate employees' attitude and behaviors towards performance and innovation. Intellectual capital encompasses structural elements (i.e., expertise, know-how, customer relationships, social values, norms, and professional skills) of firms that encourages employee's ability to generate wealth and value (Yang & Lin, 2009). With the structural relation dimension of intellectual capital, firms can also enhance their process innovativeness, efficiency, transactional time and access to knowledge codified for the organization (Serenko, Bontis, & Hull, 2016). Knowledge-based HRM practices is regarded as an investment in organization's human capital (Snell & Dean, 1992), as it has been shown to inspire employees learning which facilitates intellectual capital development. Scholars like (Collins & Clark, 2003; Martinsons, 1995) argued that firms shape the skills of their employees through the

development of HRM. Therefore, SMEs can also generate greater intellectual capital in their establishments by implementing knowledge-based HRM. Following this line of argument, the following hypothesis is formulated:

H2: Knowledge-based HRM practices has positive impact on the intellectual capital of SMEs employees

3.3 Knowledge-based HRM practices and product and process innovations

HRM practices play an important role on incremental and radical innovations. Prior scholarly works have confirmed the influence of HRM practices on innovation (e.g., Gil-Marques & Moreno-Luzon, 2013; Moreno-Luzon et al., 2013). Recent examinations further established the association of HR practices and organizational innovativeness (e.g., Hussinki et al., 2017; Inkinen et al., 2015; Kianto et al., 2014, 2017). KMS with a focus on HRM practices make use of existing knowledge in the organization to solve problems faster and easier (Zack et al., 2009). Thus, it can be concluded that knowledge management is critical in improving organization's innovation capacity. For instance, Darroch and McNaughton (2002) alluded that knowledge-oriented practices usually share relationship with innovation performance. In his research, Zack et al. (2009) established a significant positive relationship between research and development, knowledge acquisition by employees and firms' innovation. Thus, firm' innovativeness is based on promoting KMS practices that will generate new ideas and knowledge (Ozlen & Handzic, 2014). Following this line of argument, the following hypothesis is formulated:

H3: Knowledge-based HRM practices has positive influence on product and process innovations of SMEs

3.4 Knowledge management capacity and intellectual capital

Intellectual capital has been investigated alongside knowledge management (Hussinki et al., 2017; Inkinen et al., 2015; Kianto et al., 2014). In the core of intellectual capital, experience, intellectual property, information and knowledge are combined to create value (Jordão & Novas, 2017). Scholars argued that the uniqueness of knowledge applied by an organization in its generation of competitive advantage signifies the strength of the organizations' competitiveness (e.g., Engelman et al., 2017; Gonzalez, Arrondo, & Carcaba, 2017; Mendoza, 2017). As such, the quality of knowledge available to an organization through its knowledge acquisition, use and storage mechanism may impact the nature of intellectual capital developed in the organization. Intellectual capital cannot be described without the inclusion of relational capital and structural capital all of which requires adequate knowledge manage-

ment capacity to harness. Following this line of argument, the following hypothesis is formulated:

H4: *Knowledge management capacity has positive influence on intellectual capital of SMEs employees*

3.5 Knowledge management capacity and product and process innovations

Within the framework of KBV, knowledge is viewed as the most important resources with which organizations can gain and sustain superior competitive advantage (Martinez-Conesa et al., 2017; Soto-Acosta, Popa, & Palacios-Marqués, 2016). Complimenting this view, Lichtenhaler (2015) opined that an integrative KMS is required to successfully implement organizational innovativeness. Liao, Chuang and To (2011) added that KM capabilities of a firm must be well developed in order to assess and retort to competitors. On the other hand, product and process innovation requires gathering, sharing and utilization of existing and new knowledge in the firm (Rousseau, Mathias, Madden, & Crook, 2016). SMEs that shows higher level of knowledge management capacity are likely to encounter a learning effect that can advance their competencies in rapid response to business dynamics, reduced redundancy and development of inventive ideas (Chang et al., 2013; Kianto et al., 2014). Beyond its importance in creating innovative products, a deep application of knowledge also ensures continuous translation of firms' expertise into personified products, and enhanced efficiency. Following this line of argument, the following hypothesis is formulated:

H5: *Knowledge management capacity has positive influence on product and process innovations of SMEs*

3.6 Intellectual capital and product and process innovations

Intellectual capital is seen as the entirety of knowledge resources both tangible and intangible that is available to a firm. Intellectual capital ensures that codified knowledge in databases, information systems and written procedures are available to contribute to product and process innovation (Wang & Chen, 2013). Product and/or service innovation is the innovative effort of organizations that result in the creation of significantly improved or new goods or services in respect to its intended use. Whereas, innovation entails the generation of new knowledge as inputs in form of concepts and ideas or as output in form of novel products and processes. Accordingly, intellectual capital is more relevant in predicting innovation, which interprets innovation as an intrinsic activity, as such, its development will depend on human capabilities. Extant literature revealed that a possible association between intellectual capital and innovation exist (Hussinki et al., 2017; Obeidat et al., 2017). Following this line of argument, the following

hypothesis is formulated:

H6: *The intellectual capital of SMEs employees has positive influence on product and process innovations.*

3.7 Knowledge management capacity and intellectual capital as mediators

Valuable novel knowledge is often generated and transformed into processes, services and products by changing the general knowledge into specific ones that benefits the organization (Siong, Kuan Yew, & Lin, 2006). For instance, Massey, Montoya-Weiss and O'Driscoll (2008) argued that proper implementation of KMS can innovative process. The innovative efforts of firms involves probing for, and the unearthing, trying and development of new products or services, new technologies, new organizational structures, new processes and new productions (Likoum et al., 2018; López-Nicolás & Meroño-Cerdán, 2011). Organizations invest in HRM activities in order to create sustained advantage which is often evident in their innovation capabilities. Rosenbach, Taylor and Youndt (2012) concluded that the relationship between HRM practices and organizational outcomes can be better understood through mediating role of intellectual capital. Knowledge-based HRM practices will facilitate knowledge management capacity, and the amount of this will determine the level of intellectual capital in the firm (Donate et al., 2016). Furthermore, high intellectual capital enables organization to develop innovative processes and products that are not easily imitable for competitors (Cabello-Medina et al., 2011). Thus, knowledge management capacity and intellectual capital can serve as functional elements in the relationship between knowledge-based HRM and innovation processes of SMEs. Following this line of argument, the following hypothesis is formulated:

H7: *Knowledge management capacity and the intellectual capital of employees mediates the relationship between knowledge-based human resource management practices and product and process innovations of SMEs*

The research model and proposed hypotheses are presented in Figure 1.

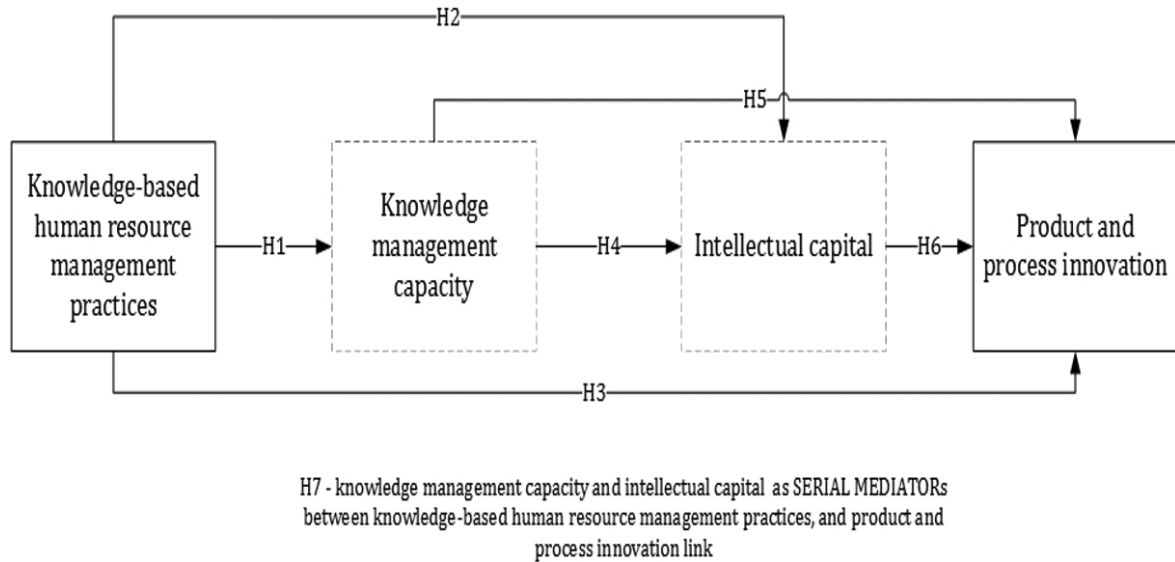


Figure 1: Research model

4 Method

4.1 Industrial context and sampling procedure

Globalization and trade liberalization have ushered in new opportunities and challenges for SMEs in developing and less affluent countries like Jordan. This paper strives to evaluate how knowledge-based HRM practices in SMEs contributes to human capital development, knowledge accumulation, and competitiveness in terms of SMEs innovation in Jordan. Sharp (2015) estimated that 98% of all enterprises in Jordan fall into SMEs category, the author concluded that the Jordanian economy is heavily reliant on SMEs activities and that the sector employs most of the incumbent workforce. The Ministry of Industry and Trade classify SME's based on the number of employees and the paid capital investment as summarized in the following table. Table 1. Based on the information obtained from the ministry, 1,400 registered SMEs are operating in Amman, Jordan (http://www.jordanyp.com/category/Small_business/city:Amman).

The developed questionnaire was back-translated to Arabic and to English by professional translators following the procedures used by (Abubakar, Megeirhi, & Shneikat, 2018; Perrewe et al., 2002). A test study was carried out with 15 people to determine the stability of the instruments. Like prior studies respondents were briefed about the intent of the research. Their "anonymity and confidentiality were assured to diminish social desirability bias and the threat of common method bias" as noted by (MacKenzie et al., 2011; Podsakoff et al., 2012). To propel

the veracity and predictability of the research, simple random sampling technique was utilized to select participating HR managers and executives of the Jordanian SMEs. At the end 250 valid responses were obtained, and consequently used for data analysis.

4.2 Measures

Knowledge-based HRM practices were captured with 13 items utilized by Kianto, Sáenz and Aramburu (2017) study. Knowledge management capacity was captured with 8 items utilized by Chen and Huang (2009) study. Intellectual capital was captured with 3 items utilized by Yang and Lin (2009) study. Product and process innovation captured with 13 items utilized by Škerlavaj, Song and Lee (2010) and Elrehail et al. (2018). The items were formulated on a 5-point response scale, and scores closer to 5 indicate a higher score.

Table 1: SMEs taxonomy in Jordan

Firm Category	Investment Size (Dinar)	No. of Employees
Micro	Less than 30,000	1-9
Small	30,000	10-49
Medium	30,000	50-249
Large	30,000	250 and above

Table 2: Demographic information of the participating SMEs

	Frequency	%
<i>R&D intensity- qualifications of the personnel hired in R&D department</i>		
Some college degree	34	13.6
Bachelor's degree	145	58.0
Higher degree	71	28.4
Total	250	100.0
<i>Incumbent employees</i>		
Less than 50	92	36.8
51 - 100	140	56.0
Above 100	18	7.2
Total	255	100.0
<i>Operating sector</i>		
Manufacturing firm	50	20.0
Service firm	200	80.0
Total	250	100.0

4.3 Analytical strategy

In regard to analytic strategy, the author first obtained 250 valid responses. As a first step, participating SMEs demographic set-ups were gauge using frequency analysis in SPSS. Then, the author assesses the representativeness of the participating SMEs by comparing their demographics make-up with that of the general SMEs in Jordan. In doing, the author addresses the potential threat of response bias. As a second step, the researcher assesses the validity and reliability and the theoretical structural of the factors under investigation. To achieve this, confirmatory factor analysis (CFA) was employed in AMOS program, indicators examined include standardized factor loadings (SFL), discriminant and convergent validity, as well as reliability of the variables under investigation.

5 Data analysis and results

5.1 Sample breakdown

In table 2, the author illustrates the demographic breakdown of the participating SMEs. The profile of the SMEs is respect to employee numbers indeed reflects The Jordanian Ministry of Industry and Trade SMEs classification.

5.2 Measurement model

Measurement model assessments and hypotheses testing were conducted using structural equation modelling (SEM) with IBM SPSS AMOS. Confirmatory factor anal-

ysis (CFA) is “a statistical technique used to verify the factor structure of a set of observed variables (Harrington, 2008); which aid researchers to identify and determine construct validity that encompass convergent and discriminant validity” (Bagozzi, 1980; Bagozzi, & Heatherton, 1994; Bagozzi, & Yi, 1988). Convergent validity and discriminant were gauge using standardized factor loadings (SFL), composite reliability (CR), average variance extracted (AVE) and Cronbach's alpha (α) for scale reliability. The modeling yielded the following outcome for a four-factor model: ($\Delta\chi^2 = \chi^2 = 1016.103$, $\chi^2 / df = 1.631$, $GFI = .820$, $NFI = .916$, $IFI = .966$, $TLI = .963$, $CFI = .966$, $RMR = .024$, $RMSEA = .050$, $PCLOSE = .000$). The model fit indices exhibited by the single factor modeling yielded a poorer fit highlighting that the measurement model is not affected by CMB and/or CMV (Podsakoff et al., 2003; Podsakoff et al., 2012). The scale items also exhibited high standardized factor loadings that spanning from .835 to .878; with significant t-values that spans from 17.647 to 19.289. These criteria meet those set-forth by (Anderson & Gerbing, 1988; Fornell, & Larcker, 1981). See Table 3.

The study's alpha value exceeded .70 (Nunnally, 1976), the CR value exceeded the index, .60 (Hair et al., 2010), and AVE values are more than .50 (Anderson & Gerbing, 1988). It is on this premise that we concluded that the model of interest has achieve both convergent and divergent validity with good internal consistency. Inter-correlations, mean and standard deviations of the variables in the research model are reported in Table 4. We uncover that knowledge-based HRM has a positive and significant relationship with knowledge management capacity ($r = .959$, $p < .001$); intellectual capital ($r = .937$, $p < .001$) and product and process innovation ($r = .975$, $p < .001$).

Table 3: Descriptive statistics of the survey items

Variables	SFL(t-value)
KNOWLEDGE-BASED HRM	
<i>Knowledge-based HRM - Recruiting and selection</i>	
“When recruiting, we pay special attention to relevant expertise”	.859 (-)
“When recruiting, we pay special attention to learning and development ability”	.856 (18.495)
“When recruiting, we evaluate the candidates’ ability to collaborate and work in various networks”	.878 (19.401)
<i>Knowledge-based HRM - Training and development</i>	
“We offer our employees opportunities to deepen and expand their expertise”	.854 (18.399)
“We offer training that provides employees with up-to-date knowledge”	.872 (19.175)
“Our employees have an opportunity to develop their competence through training tailored to specific needs”	.871 (19.095)
“Competence development needs of employees are discussed with them regularly”	.846 (18.082)
<i>Knowledge-based HRM - Performance assessment</i>	
“The sharing of knowledge is one of our criteria for work performance assessment”	.857 (18.533)
“The creation of new knowledge is one of our criteria for work performance assessment”	.835 (17.647)
“The ability to apply knowledge acquired from others is one of our criteria for work performance Assessment”	.870 (19.077)
<i>Knowledge-based HRM - Compensation</i>	
“Our company rewards employees for sharing knowledge”	.838 (17.781)
“Our company rewards employees for creating new knowledge”	.851 (18.293)
“Our company rewards employees for applying knowledge”	.859 (18.589)
<i>Intellectual Capital</i>	
“Our employees are highly skilled at their jobs”	.855 (18.035)
“Our employees are highly motivated in their work”	.861 (18.256)
“Our employees have a high level of expertise”	.859 (18.589)
	.845 (-)
KNOWLEDGE MANAGEMENT CAPACITY	
<i>Knowledge management capacity - acquisition</i>	
“Knowledge was obtained from customers”	.853 (-)
“Knowledge was obtained from partners”	.869 (18.720)
“Knowledge was obtained from employees”	.868 (18.703)
<i>Knowledge management capacity - sharing</i>	
“Knowledge was shared between supervisors and subordinates”	.854 (18.150)
“Knowledge was shared between colleagues”	.871 (18.827)
“Knowledge was shared between units”	.860 (18.379)
<i>Knowledge management capacity - application</i>	
“Effectively managing knowledge into practical use”	.864 (18.536)
“Effectively utilizing knowledge into practical use”	.858 (18.288)
PRODUCT AND PROCESS INNOVATION	
<i>Product and service (technical) innovations</i>	
“In new product and service introduction, our company is often first-to-market”	.850 (18.518)
“Our new products and services are often perceived as very novel by customers”	.850 (18.490)
“New products and services in our company often take us up against new competitors”	.848 (18.451)

Table 3: Descriptive statistics of the survey items (continued)

“In comparison with competitors, our company has introduced more innovative products and services during past 5 years”	.868 (19.289)
“We constantly emphasize development of particular and patent products”	.849 (18.461)
“We manage to cope with market demands and develop new products quickly”	.851 (18.529)
“We continuously modify design of our products and rapidly enter new emerging markets”	.866 (19.195)
“Our firm manages to deliver special products flexibly according to customers’ orders”	.857 (18.785)
“We continuously improve old products and raise quality of new products”	.861 (18.957)
Process (administrative) innovations	
“Development of new channels for products and services of our corporation is an on-going process”	.865 (17.951)
“We deal with customers’ suggestions or complaints urgently and with utmost care”	.851 (19.108)
“In marketing innovations (entering new markets, new pricing methods, new distribution methods, etc.) our company is better than competitors”	.864 (18.548)
“We constantly emphasize and introduce managerial innovations (e.g. computer-based administrative innovations, new employee reward/training schemes, new departments or project teams, etc.)”	.836 (-)

Note: χ^2 – Chi-square; χ^2 / df (CMIN/DF) – Relative Chi-square; The GFI (goodness of fit index); The normed fit index (NFI), Incremental fit index (IFI); The Tucker-Lewis coefficient (TLI); The comparative fit index (CFI); The RMR (root mean square residual). The Root Mean Square Error of Approximation (RMSEA); SFL, standardized factor loadings; -* discarded items during confirmatory factor analysis

Table 4: Correlation coefficient and measures descriptive statistics

Note: ** p -value < .001; * p -value < .05;

Variables	1	2	3	4
1. Knowledge-Based HRM	-			
2. Knowledge Management Capacity	.959**	-		
3. Intellectual Capital	.937**	.930**	-	
4. Product and Process Innovation	.975**	.962**	.933**	-
Mean Score	3.709	3.712	3.679	3.733
Standard Deviations	.942	.976	.989	.941
Composite reliability	.973	.959	.890	.973
Cronbach’s alpha	.973	.959	.890	.972
Average variance extracted	.735	.743	.729	.731

Secondly, knowledge management capacity has a positive and significant relationship with intellectual capital ($r = .930, p < .001$) and product and process innovation ($r = .962, p < .001$). Finally, intellectual capital exerts a positive and significant relationship with product and process innovation ($r = .933, p < .001$). These outcomes suggests that the variables under investigation are closely related and are in harmony with the theoretical framework.

5.3 Structural model

AMOS v.21 was used to test the structural model and hypotheses. See figure 2. Table 5 presents seven impor-

tant findings that are worth listing, as expected knowledge-based HRM practice exerts a positive and significant impact on knowledge management capacity ($\beta = .959, p < .001$); intellectual capital ($\beta = .555, p < .001$), and product and process innovation ($\beta = .600, p < .001$). This lead us to **support hypothesis 1, 2 and 3**. Furthermore, knowledge management capacity SMEs exerts a positive and significant impact on intellectual capital ($\beta = .399, p < .001$) and product and process innovation ($\beta = .311, p < .001$). This lead us to **support hypothesis 4 and 5**. Similarly, Intellectual capital of SMEs exerts a positive and significant impact on product and process innovation ($\beta = .082, p < .05$). Thus, **hypothesis 6 was supported**.

Hayes (2015) added that one of the beauties of boot-

strapping is that the inference is based on an estimate of the indirect effect itself, but unlike the Sobel test, it makes no assumptions about the shape of the sampling distribution of the indirect effect, thereby getting around this problem that plagues the Sobel test. Based on the extant benefits and strengths of SEM and bootstrapping. The researcher adopted bootstrapping analysis with bias-corrected confidence interval of 95% using a validation sample that is equals to 5,000 to test hypothesis 7. The result shows that SMEs knowledge management capacity and their intellectual capital mediated the link between knowledge-based HRM practices and, product and process innovations ($\beta = .375$, $\rho < .001$). Bias-corrected estimates asserts that a partial mediation exist with ($\rho = .000$, 95% confidence interval: .262 – .480). This lead us to **support hypothesis 7**. See Table 6.

6 Discussion and conclusion

The literature is devoid of both empirical and theoretical evidence on the association between knowledge-based HRM knowledge management, intellectual capital and innovation in a non-Western work setting. The current study premise on this gap to by investigating the above said relationships, with the hope that the findings can be implemented by top management of organization who are

concerned with transforming their human capital into organizational success, more specifically, innovations. This study is important as it unveils the mechanistic process that results in process and product innovation, as well as the combination of knowledge-based HRM practices, which has been proved to be an antecedent of intellectual capital. To spice up process, knowledge management notable antecedent of intellectual capital was considered. In doing so, this paper has enormous theoretical and empirical contributions to literature by interrogating and validating theories and concepts developed in the Western World in a non-Western context, Jordan

Firstly, this study confirmed knowledge-based HRM practices have positive influence on knowledge management capacity of SMEs. Suggesting that SMEs' propensity for knowledge management capacity development is a function of the nature of its human resource. This finding is in line with (Kang et al., 2012) findings. Firms with these practices can easily develop knowledge management capacity, thus, providing avenue for knowledge application that will in turn yield superior product offerings (Donate et al., 2016). **Secondly**, this paper revealed that knowledge-based HRM practices have positive influence on intellectual capital of SMEs employees. This finding also corroborates other in extant literature prior to the current study (Kianto et al., 2014; Ortiz et al., 2016).

Table 5: Structural equation modeling weights using maximum likelihood techniques

Note: β , standardized beta; β , beta standardized beta; SE, standard errors; *** ρ -value < .001; ** ρ -value < .05

Variables		β	Beta	SE	ρ
Knowledge-based HRM	– Knowledge management capacity	.959	.993	.019	***
Knowledge-based HRM	– Intellectual capital	.555	.582	.077	***
Knowledge-based HRM	– Product and Process Innovation	.600	.599	.049	***
Knowledge management capacity	– Intellectual capital	.399	.404	.075	***
Knowledge management capacity	– Product and Process Innovation	.311	.300	.045	***
Intellectual capital	– Product and Process Innovation	.082	.078	.036	**

Table 6: Effects bifurcation (total, direct and indirect) with 5,000 resample

Note: LO, lower bound; UP, upper bound; CI, confidence interval; *** ρ -value < .001; ** ρ -value < .05;

Variables		Total	Direct	Indirect	LO	UP
Knowledge-based HRM	– Knowledge management capacity	.959	.959	.000		
Knowledge-based HRM	– Intellectual capital	.937	.555	.382***	.213	.550
Knowledge-based HRM	– Product and Process Innovation	.975	.600	.375***	.262	.480
Knowledge management capacity	– Intellectual capital	.399	.399	.000		
Knowledge management capacity	– Product and Process Innovation	.344	.311	.033**	.000	.078
Intellectual capital	– Product and Process Innovation	.082	.082	.000		

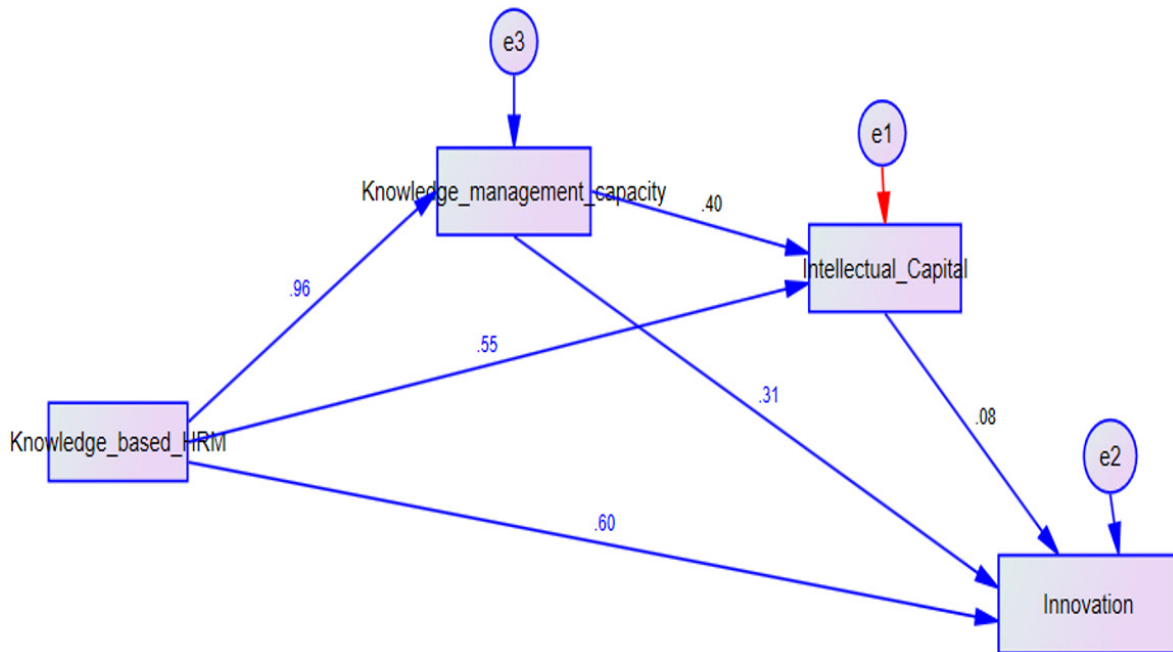


Figure 2: Structural model

Third, knowledge-based HRM practices have positive influence on product and process innovations of SMEs, implying that the strength of process and product innovativeness of an SMEs cannot be dissociated from its reliance on HRM. This finding also supports that of Cooke and Saini (2010) who investigated the role of human resource strategies on the innovative process of business. **Fourthly**, the paper revealed that knowledge management capacity has a positive influence on intellectual capital of SMEs employees. The outcome of this study, implies that developing intellectual capital in SMEs required effective knowledge management (Jordão & Novas, 2017). To attain substantial level of innovativeness, firm must take advantage of its intellectual capital in creating new value. **Fifth**, this paper revealed that knowledge management capacity has a positive influence on product and process innovations of SMEs. This result suggests that beyond knowledge management capacity influence on intellectual capital, it also significantly impacts firms' innovativeness directly. Having this result help, us to understand that knowledge both tacit and explicit are essential building blocks for firm's innovation. This result also confirms and support the existing body of knowledge in this context (Hussinki et al., 2017).

Sixth, this paper revealed that intellectual capital of SMEs employees has positive influence on product and process innovations, implying that intellectual capital facilitates innovation through appropriate use of codified knowledge by employees (Donate & de Pablo, 2015). Prior studies have linked innovation to intellectual capital of

the firm (Donate et al., 2016; Kianto et al., 2017). **Lastly**, this paper confirmed the mediating effect of knowledge management capacity and intellectual capital on the relationship between knowledge-based HRM and, process and product innovation. This finding is crucial in that it elicit other mechanism that may enhance the influence of knowledge-based human resources practices on innovation. Apart from the contribution of this study in filling the gap in literature that seek to understand the mechanism for optimal influence of knowledge-based HRM practice on innovation, this finding also signifies the need for SMEs to pay adequate attention to knowledge systems and intellectual capital within their establishments.

6.1 Implications for theory and practice

Although studies have recognized the importance of knowledge-based HRM in SMEs, research examining cogent issues within this context is lacking (e.g., Nasution et al., 2011; Nicolau & Santa-Mara, 2013), and the current study provide an empirically proven result that highlights and confirm the importance of knowledge-based HRM in SMEs. The model presented in this research provide managers with tool for conceptual thinking regarding the mechanisms they can deploy in their firms when aspiring to produce novel value-adding products and services. This paper's perspective is centered on knowledge flow in organization from HR practices to innovation. This assertion is consistent with Knowledge-Based View (KBV) theory, that is modeled with much reference and impetus

Resource-Based View (RBV) of the firm. The missing link is that RBV does not give knowledge much attention, because knowledge is considered as a generic resource. To amend these drawbacks, KBV emphasizes the strategic importance of knowledge-based resources that portend firms' competitive advantage. Theoretically, this paper contributes to knowledge management and human resources management research stream by linking knowledge-based HRM with innovation through knowledge management capacity and intellectual capital. In sum, the present study validates the assumption of KBV.

This paper recommends that managers should create an enabling work environment that will harness the benefits of KMS through knowledge-based HRM practices. Finally, process and product innovation can reach its peak when knowledge-based HRM practices are augmented with adequate knowledge management capacity and intellectual capital. As such, managers must encourage teamwork that will facilitate knowledge exploration, development and sharing among their personnel's. Practically, the findings from this study can be implemented by top management of organization who are concerned with transforming their human capital into organizational success. It is worthwhile to acknowledge that this paper inherits several limitations as follows. One, data was gleaned using a self-report approach with subject the outcome to social desirability bias. Two, data was gleaned at a single point using single source, thus, causal inference may have effect on the outcome. Three, although random sampling technique was utilized but sample size seems small, which questions the representativeness of the sample. The current outcome is limited to Jordan and cannot be generalized to other countries and cultural work settings with more resources.

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Prakse, ki temeljijo na znanju, in inovacije v malih in srednje velikih podjetjih

Ozadje in namen: Nedavni pregledi literature o upravljanju s človeškimi viri (HRM) še naprej postavljajo upravljanje znanja in intelektualni kapital kot ključne dejavnike za konkurenčnost, produktivnost in organizacijsko uspešnost. Članek raziskuje povezavo med praksami na področju znanja, ki temeljijo na znanju, zmogljivosti upravljanja znanja, intelektualnega kapitala, inovacij v proizvodih in procesih v malih in srednje velikih podjetjih (MSP).

Zasnova / metodologija / pristop: Podatki so bili zbrani pri 250 registriranih MSP v Jordaniji s pomočjo preproste tehnike naključnega vzorčenja. Modeliranje kovariančne strukturne enačbe je bilo uporabljeno pri preskušanju predlaganega raziskovalnega modela.

Rezultati: Ugotovitve osvetljujejo pozitiven vpliv prakse na znanju managementa malih in srednjih podjetij, ki temelji na znanju, na sposobnosti upravljanja znanja, intelektualnega kapitala in inovacij v proizvodih in procesih MSP. MSP, ki upravlja z znanjem, lahko pozitivno vpliva na svoj intelektualni kapital ter inovacije proizvodov in postopkov. Intelektualni kapital se kaže tudi kot močan napovedovalec inovacij proizvodov in procesov v MSP. Ugotovili smo tudi serijski posredni učinek (mediacijo) sposobnosti upravljanja znanja in intelektualnega kapitala na odnos med prakso, ki temelji na znanju, HRM in MSP, ter inovativnost izdelkov in procesov.

Zaključek: Praksa in inovativnost temelječa na znanju, sta bili deležni veliko pozornosti raziskovalcev, vendar je razumevanja procesa, s katerim znanje vodi do inovativnosti, nepopolno. Na podlagi teorije, ki temelji na znanju (KBV), je ta študija med prvimi poskusi, da se razkrije strukturni proces med praksami in inovacijami, ki temeljijo na znanju, in inovacijami prek zmogljivosti za upravljanje znanja in intelektualnega kapitala. Študija je teoretično ovrednotila okvir KBV v ne-zahodnem kontekstu in pokazala pomembnost na znanju temelječe prakse HRM za inovativnost MSP. Ugotovitve ne zagotavljajo le koristnih spoznanj za menedžerje in strokovnjake, ampak lahko služijo tudi kot gradnik za nadaljnje raziskave.

Ključne besede: prakse kadrovanja; intelektualni kapital; inovacije izdelkov; inovacije procesov; znanjske zmogljivosti

Behavioural Aspects of the Financial Decision-Making

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Background and Purpose: Behavioural finance is a relatively new, but rapidly evolving field that provides explanations of an economic decision-making by cognitive psychology, conventional economic and financial theory. Behavioural finance searches the influence of psychology on the behaviour of financial practitioners and the subsequent effects on the financial markets. The purpose of the paper is the research on behavioural aspects of financial decision-making as they help explain why and how markets might be inefficient.

Design/Methodology/ Approach: Fuzzy logic is an excellent tool for working with linguistic variables that are often found when working with behavioural data. Thus, we analyse the financial decision-making process from the perspective of behavioural finance aimed at better understanding of the decision-making process of investors applying the principles of fuzzy logic to solve various financial problems.

Results: The results of the study indicate that fuzzy logic is applicable when solving problems of financial management and financial decision-making problems. The urgency of the fuzzy logic application for managerial and financial decisions should be emphasized. Research in this area indicates that in some cases, as in the case of behavioural financing, the use of fuzzy logic is far more suitable than the use of other methods (Peters, Aguiar and Sales).

Conclusion: The novelty of the paper is to extend the application of fuzzy sets in the area of financial decision-making. The paper demonstrates that despite the fact, that fuzzy logic is currently used mainly in technical directions, it is applicable also in financial management, especially, in cases where it is necessary to consider the influence of human and the occurrence of linguistic variables.

Keywords: *behavioural economics; behavioural finance; fuzzy transform; fuzzy sets*

1 Introduction

Traditional finance uses models in which the market subjects are assumed rational, efficient and unbiased users of relevant information and whose decisions are consistent with utility maximization (Mendes-Da-Silva, et al., 2015: 10). The basic assumption of traditional finance is that all market participants, as well as the market itself, behave rationally to maximize their benefits (Sewell, 2007). Any investor who makes a non-optimal decision will be penalized by poor market outcomes. It is also true that the individual errors made by market participants are not correlated with each other and therefore these errors do not have the power to influence market prices. This rationality

of market participants is one of the classic theories of the standard market: the efficient market hypothesis (Kliger and Van den Assem, 2014). Another basic concept is the relationship between expected profit and risk: risk-averse market subjects demand greater profits for risky investments.

The assumptions of traditional finance have unrealistic requirements in terms of human behaviour (Jay, 2003). Behavioural finance examines the impact of human constraints on decision-making (Nadanyiova, 2016). It also assumes that the financial market is under certain circumstances incompletely informed. Not all bad valuations of securities are caused by psychological influence. Some are also caused only by a temporary imbalance between demand and supply (Kercheval, 2012; Olah et. al., 2018).

Thus, compared to traditional finance, behavioural finance is based on the alternative notion that investors, or at least a significant minority of them, are subject to behavioural biases, that means, their financial decisions can be less than fully rational (Xu, 2014). The main reason is that the features of cognitive psychology are applied in a financial context, e.g. overconfidence and over-optimism of investors' ability and the accuracy of the information; representativeness; conservatism; availability bias resulting from the overstatement of the probabilities of recent experienced events; frame dependence and anchoring; mental accounting and regret aversion (Richards, 2014).

Behavioural finance does not describe financial markets and market decision-making processes using mathematical models, but it is based on psychological observations and relies on the use of heuristics. Many assumptions of behavioural finance and most of the key concepts of the prospect theory are derived from experiments (Teichmann, 2015). There is usually no mathematical evidence for the results of these experiments, but many anomalies in the real financial markets can only be explained by behavioural finance findings. To name some of the anomalies, where only the psychological factors could be at work to explain the decision-making of investor, are the January effect, the effect of neglected stocks (this effect occurs on stock that is less liquid and tends to have minimal analyst support), the movement of stocks on the days of the week (months of the year), etc. The issue of investor sentiment and anomalies in cross-sectional stock returns is explored in the study of Stambaugh, et al. (2012) or Fama (1998). On the other hand, there are authors, who use relevant statistics and detail calculations and try to build the findings of behavioural economics into the model (Koszegu and Rabin, 2006; Smith, 1976). However, in general, the psychological factor and the effort to understand why the real market does not work as it should using the mathematical models of the traditional theory of finance have made the behavioural finances a field in which many practices and scenarios can be described by fuzzy logic.

To extend the knowledge on the behavioural finance, the main aim of this study is focused on the analysis of the behavioural finance using fuzzy sets. The novelty of the study is the search of the mutual connection between behavioural finance, i.e. financial decision-making and fuzzy sets, which is a subject of only a few researches, and thus its robust and deep study may bring a new model aimed at better understanding of the financial decision-making processes. Thus, the purpose of the paper is to judge the behavioural aspects in the financial decision making applying the principles of fuzzy logic.

The article is divided into four main parts. Literature review depicts the most important researches conducted in the field of the financial decision-making process from the perspective of behavioural finance. Methodology section explains the application of fuzzy logic principles and its basic assumptions. The application of fuzzy logic in condi-

tions of the behavioural financing is solved in Results. The section Discussion, conclusions and recommendations underlines the role of the fuzzy logic in solving various problems of financial management and financial decision-making process, depicts the limitation of the study as well as the future direction of the research.

2 Literature Review

For quite a long time, financial decision-making followed only the traditional theory of finance, which basic principles include the fact that people choose from possible alternatives to maximize their expected profits (Holzer, 2017; Zhuravleva, 2017). The traditional theory considers an aversion to the risk of a given subject as an unchanging variable. Then in 1979, Tversky and Kahneman introduced the prospect theory describing, that people underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty; also, that people generally discard components that are shared by all prospects under consideration (Radin and Riashchenko, 2017). The prospect theory, which they confirmed by experiment, predicts a distinctive fourfold pattern of risk attitudes: risk aversion for gains of moderate to high probability and losses of low probability and risk seeking for gains of low probability and losses of moderate to high probability. Prospect theory explores how people choose from a variety of options (Friedman and Gerstein, 2017) and, on the other hand, assumes that people choose the alternative that will bring the greatest change in their wealth (Bureš et al., 2015). It means that people do not look at profits in absolute terms, but they measure the gain with respect to the reference point – property - at the beginning of the period (Marakova and Medvedova, 2016). The main differences between traditional theory and prospect theory are the perception of risk and the aversion to risk (Barberis and Thaler, 2003). In the prospect theory, aversion to risk varies according to how people perceive the change in their wealth. Kahneman and Tversky (1979) additionally assume that humans are naturally averse to the losses. The importance of their research findings was highlighted in the study of Costa et al. (2017) who claim the prospect theory is closely related to the issue of the behavioural finance, which has been a subject of various researches since 1990 when first scientific articles were published. The results have shown that few types of researches relating overconfidence, anchoring and confirmation biases to behavioural finances have been growing throughout the time.

Behavioural finance theory put psychology behaviour science theory into finance in order to use its pioneering view to re-examine investment behaviour in financial markets. However, Hoff and Stiglitz (2016) emphasize that not only psychology but also sociology and anthropology broaden economic discourse by importing insights into human behaviour. Behavioural finance assumes that indi-

vidual financial decisions are influenced by emotions and mood (Rakovska and Svoboda, 2016). Many researchers studied the historical development of behavioural finance and its future research direction (Huang et al., 2016; Yang, 2016). Other important issues are devoted to the aspects of market investment behaviour (Khashanab and Alsulaiman, 2016), to the approaches that are helpful when trying to understand how financial markets perform (Bird et al., 2017) or to heuristic and biases in managerial decision-making under the risk (Houdek and Koblovsky, 2014).

Behavioural finance holds important implications for the practice of financial management and innovation (Zhang, 2009). The effect of individual psychology in investor decision making has to be considered while investment decision making is under the influence of personality, experience, judgement and special social relations, which can cause behavioural biases (Khoshnood and Khoshnood, 2011). The most important studies being carried out in the field of behavioural finance and trying to explain the investor sentiment in the stock market are the studies of Baker and Wurgler (2007), DellaVigna (2009) and Shiller (2003). The fact, that we are in a golden age of behavioural science (Cialdini, et al., 2018), makes the behavioural economics an important incentive to explain the irrationality of human decision-making.

A great deal of research on complex decision-making has been done in two separate fields: fuzzy logic and behavioural psychology. In behavioural psychology (and in its subset behavioural finance), we have an empirical evidence that people make decisions based on rules called heuristics (Peter, 1996). However, there is no mathematical model that would allow using this psychological knowledge. This issue is partly solved by fuzzy logic, a rigorous branch of mathematics that has been able to quantitatively formulate decision-making (Kovacova and Kliestik, 2017; Kliestikova et al., 2017). The topic of the financial market modelling, decisions made on the market and related risk issues is a wide-ranging debate between fundamentalists and behaviourists. While the irrational traders are known by a shift in their sentiments, the rational ones have a limited capacity of arbitration. Hachicha et al. (2011) in their research investigates the development of a new modelling technique using fuzzy sets to explain the financial market dynamics perceived differently by fundamentalists and behaviourists. Mullor et al. (2002) adapted data envelopment analysis using the theory of fuzzy sets and fuzzy systems. Their results are pioneering as the system allows treating all imprecise and subjective variables which intervene in measuring the financial efficiency in public and private organisations. Casillas et al. (2004) suggested a new method to model the behaviour of customers using fuzzy sets. Their behavioural model is mostly used to explain the consumers' changes in behaviour when making decisions, which can be easily applied in the sector of behavioural financing (Hryhoruk et al., 2017). The fuzzy methodology was used in the study of Michalopoulos et al. (2004) to se-

lect an optimal portfolio of government bonds. The model of fuzzy programming is used to specify the portfolio, which meets the investors' requirements. Incorporation of fuzzy approaches to option price modelling is explained in the studies of Munoz et al. (2013) and Muzzioli and De Beats (2017). The analysis of investors' expectations of financial development is depicted in the study of Barbera et al. (2008). Kim and Sohn (2016) proposed a fuzzy process to study psychological and behavioural attributes of entrepreneurs. Schjaer-Jacobsen (2004) portrayed and modelled the economic uncertainty using the fuzzy number; the research was enriched by the study of Pazzi and Tohmé (2004) who form a model of uncertainty in the financial crisis using the fuzzy risk rate.

The recent research in the financial sector, taking into account the fuzzy principles, is conducted in the area of risks. Kemaloglu et al. (2018) clarify the use of fuzzy logic to interpret dependent financial risks. The financial risks of projects are identified simulating the fuzzy system in the search of Bolos et al. (2015). It is obvious, that risk plays a key role in financial management, which forced Maciel et al. (2017) to research a way to measure risk exposure. As a result, they suggested an evolving possibilistic fuzzy modelling approach to estimate value at risk. Volatility modelling and forecasting are inseparable components of financial and risk management, thus an evolving fuzzy modelling approach for financial forecasting and financial market movements was developed by Maciel et al. (2016), Zgurovsky and Zaychenko (2016) or Vella and Ng (2014). The practical use of fuzzy logic and simulations in the decision-making process is declared in the survey of Chui and Ip (2017).

3 Methodology

We analyse the financial decision-making process from the perspective of behavioural finance aimed at better understanding of the decision-making process of investors applying the principles of fuzzy logic to solve various financial problems. We use this method to find out the level of the risk tolerance of clients and investors based on their annual income and total assets. We follow the problem of the investment policy determined by Bojzdziev and Bojzdziev (2007) who assess the possible decision-making process of investors by three variables: risk tolerance ability, annual income and total networth. Fuzzy logic is used to demonstrate, that now only the conventional mathematical models are important in the sector of financial management as their application is rather questionable in the sector of financial and managerial systems, which involve many social and psychological factors. Fuzzy logic enables to describe these factors, uses logic operations and if-then inferential rules to find the conclusion. The paper proves that financial problem may be solved without traditional mathematical models, applying the heuristic principles.

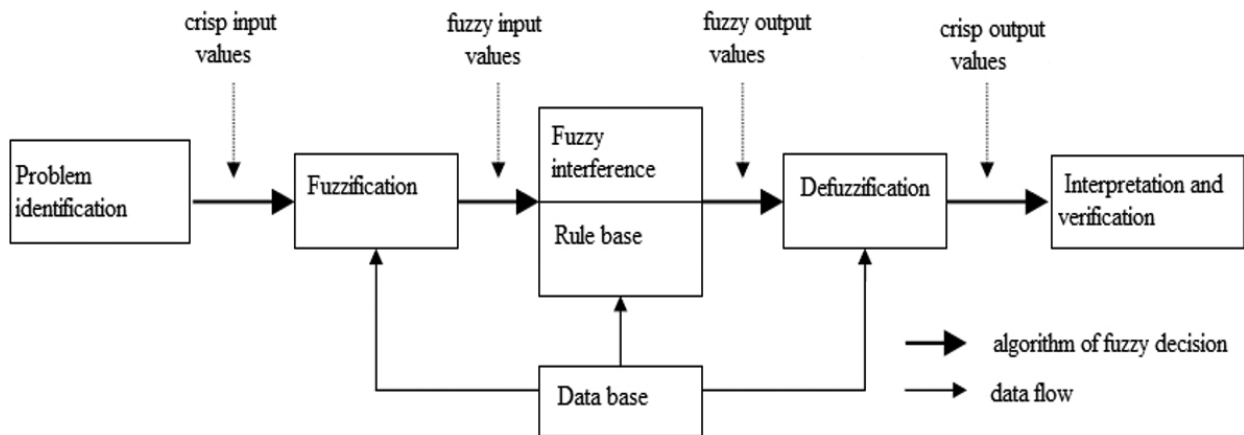


Figure 1: Algorithm of fuzzy decision

Fuzzy logic is a mathematical discipline, introduced by Lotfi Zadeh in 1965, which disproves the traditional assumption that in the area of general consideration some idea either belongs or does not to the consideration. It is a logic trying to be as close as possible to human thinking and perception. Derroncourt (2013) states that fuzzy logic is based on the principle of fuzzy sets by introducing the notion of degree in the verification of a condition, enabling a condition to be in a state other than true or false and provides a very valuable flexibility for reasoning, which makes it possible to take into account inaccuracies and uncertainties. Fuzzy logic is an appropriate tool to work with data when we look for solutions that may not necessarily be the best, but can provide significant outputs, which is also one of the characters of behavioural finance. The study of Aquiar and Sales (2011) even shows that some behavioural heuristics are directly incorporated in the fuzzy algorithms.

The procedure of fuzzy processing is realized in several steps, as shown in Figure 1 (Dostál, 2012).

Firstly, the input and output variables are to be modelled. In fuzzy problems, these data are often linguistic variables, which are changed to fuzzy numbers from input variables in the process of fuzzification. Fuzzy interference is the step, in which the rule base is formed using conditional sentences < If, Then >, and its result is a linguistic variable. The last phase – defuzzification – transforms the results of the fuzzy interference into the real numeric value. Basic assumptions of the fuzzy system were identified by Fullér (1995, 144-145) and we also follow this methodological process:

1. Finding out if the fuzzy system is the right choice for the problem. If the knowledge of the system behaviour is described in an approximate form or by heuristic rules, then fuzzy logic is appropriate. Fuzzy logic can also be useful in understanding and simplifying processing if the system behaviour requires a complex mathematical model.

2. Identification of inputs, outputs and their ranges. The range of the measurement typically corresponds to the range of input variables and the range of control measures provides a range of output variables.
3. Definition of the membership function for each input and output variable. The number of the required membership functions is considered and is depended on the system behaviour.
4. Creation of the rule base (RB), however, it has to be determined how many rules are necessary. The number of rules is determined by the multiplication of attributes of each input variables. Thus, in case of two input variables both having three attributes, the number of rules is $3 \cdot 3 = 32 = 9$.
5. Verification, if input rules give an output in the accepted range and if this output is appropriate and correct according to the rules of the input set.

To provide the calculation and analysis we used the software fuzzyTECH 5.54 for Business and Finance.

4 Results

The application of fuzzy logic in conditions of the behavioural financing followed the problem of the investment policy determined by Bojazdiev and Bojazdiev (2007). We focused on the risk aspects of investment decision-making, where the financial risk of a company (investor) was searched in terms of its economic result and total assets (property). The result of the study is the determination of the tolerance of risk on the scale from 0 to 100 in per cents (fuzzy tech uses relative numbers on the scale from 0 to 1 with membership functions), which may help the financial institution to group the investors according to the tolerance of risk and adopt proper investment policy.

To model the financial risk of an investor, we define annual income (AI) and property (P) as input variables

Table 1: Input and output variables for the fuzzy inference system

Variable	Values of membership functions	Range
AI	small, medium, high	Small when a variable value is below 20, medium when between 20 and 80 and high when above 80.
P	small, medium, high	
TR	small, medium, high	

and the tolerance of risk (TR) as the output variable. These three variables - having the attributes of small, medium and high - may be written as fuzzy sets (Table 1).

The defined variables are fuzzy numbers of universal sets $U_1 = \{x \times 10^3 \mid 0 \leq x \leq 100\}$, $U_2 = \{y \times 10^4 \mid 0 \leq y \leq 100\}$, $U_3 = \{z \mid 0 \leq z \leq 100\}$.

Real numbers x and y represent sums in thousand or ten thousands and z is for the risk tolerance which is from the interval $[0, 100]$. To be able to use the variables S , M and H as fuzzy numbers, their membership functions have to be assigned.

$$\mu_s(v) = \begin{cases} 1 & 0 \leq v \leq 20 \\ \frac{50-v}{30} & 20 \leq v \leq 50 \end{cases}$$

$$\mu_M(v) = \begin{cases} \frac{v-20}{30} & 20 \leq v \leq 50 \\ \frac{80-v}{30} & 50 \leq v \leq 80 \end{cases} \quad (1)$$

$$\mu_H(v) = \begin{cases} \frac{v-50}{30} & 50 \leq v \leq 80 \\ 1 & 80 \leq v \leq 100 \end{cases}$$

Each defined input and output variable has to be determined by the membership function. However, an appropriate membership function is very important as it affects a fuzzy inference system. It is a subjective matter of an analyst depending on their knowledge, skills and preferences; thus, we used the triangular and trapezoidal types of functions, following the equation (1), as shown in Figure 2.

The most important step is the formation of the fuzzy rule base; it is necessary to consider the weight and importance of each input criteria. In our model, we work with

nine rules, which are schematically portrayed in Figure 3.

Looking at these rules in details, we see that they describe the natural behaviour of people. It is clear, that an investor (a company) with small income and level of total assets is willing to undergo only a small risk when investing their assets. On the contrary, having high annual income and total assets mean that people are more likely to invest with larger risk. Of course, these assumptions do not apply equally to everyone. It is possible to adjust these rules in a case of the risk aversion. However, for the initial categorization of clients without further research, these rules are sufficient.

The last step of the process - when the membership functions of inputs and outputs are set, all IF-THEN rules are defined - is to set the values of the individual attributes, which are of vital importance to determine the final evaluation of the financial decision-making of the individual investor. Fuzzy tech software 5.54 uses the Interactive Debug Mode to determine the output value, thus, we have to set the single values of input attributes and we assess an investor with the annual income of 40,000 € and property of 250,000 €. The main aim of this step, defuzzification, is to change the final function of the outputs to the real (crisp) value. For the calculation of non-fuzzy number in the study, we use the centre of area method, the most popular one with the best accuracy of the results. It means that the centre of the plot area is limited by the final function and the axis; the shape of the function has to be taken into consideration (Dostál, 2012). The following figure (Figure 5) demonstrates the numerical value of the risk tolerance (the resulting value is 9.998) of the client and the resulting membership function. The minimum function for fuzzy inputs creates the relevant strength of rules; the minimum function gives the results in divided triangles and trapezoids; the resulting rule - tolerance of risk is depicted in Figure 4 by a black line.

In the context of the application of the fuzzy logic principles in the financial decision making, we can conclude, that financial risk of a client (company, investor) can be assumed, knowing their annual income and total assets, on the scale from 0 to 100. The study provides a guide based on fuzzy rules, capturing the complex system, where humans are involved. Fuzzy logic is an effective tool of modelling in the environment characterized by uncertainty and imprecision, which definitely is the case of the financial decision-making. The model calculation shows that the client with the annual income of 40,000 € and property of 250,000 € is specified by small risk tolerance. The similar methodology may be used to assess the risk tolerance of any investor, knowing their aversion and tolerance to risk may help the financial institution offer an appropriate investment product and understand the way of individual psychology in investor decision-making, and also to adopt a proper investment strategy (in case of small risk tolerance it is advised to apply the conservative investment strategy).

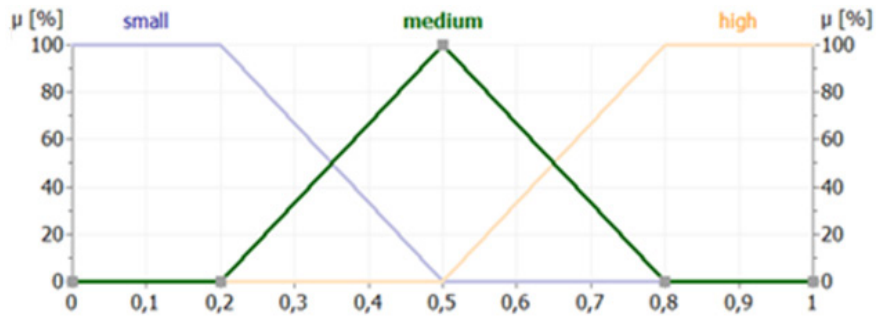


Figure 2: Membership function of input and output variables

	Name	If	And	Operators	Then	With
B1	RB1	1	2	Min / Max	1	
B1.G1		AI	P		TR	DoS [%]
B1.G1.R1		AI.small	P.small	=>	TR.small	100
B1.G1.R2		AI.small	P.medium	=>	TR.small	100
B1.G1.R3		AI.small	P.high	=>	TR.medium	100
B1.G1.R4		AI.medium	P.small	=>	TR.small	100
B1.G1.R5		AI.medium	P.medium	=>	TR.medium	100
B1.G1.R6		AI.medium	P.high	=>	TR.high	100
B1.G1.R7		AI.high	P.small	=>	TR.medium	100
B1.G1.R8		AI.high	P.medium	=>	TR.high	100
B1.G1.R9		AI.high	P.high	=>	TR.high	100
*						
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Figure 3: Fuzzy rule base for tolerance of risk

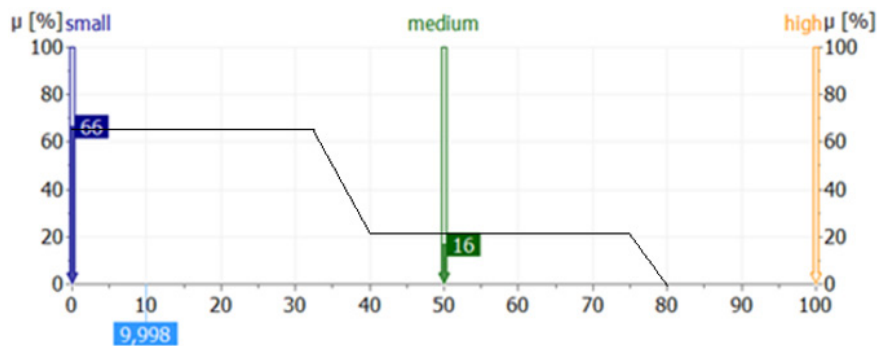


Figure 4: Defuzzification

5 Discussion, conclusions and recommendations

Behavioural finance proposes psychology-based theories to explain stock market anomalies, such as severe rises or falls in stock price (Ritter, 2003). The purpose is to identify and understand why investors make certain financial choices. Within behavioural finance, it is assumed the information structure and the characteristics of market participants systematically influence individuals' investment decisions as well as market outcomes. Financial decision-making accepting behavioural principles learn the investors make effective decisions to maximize profitability and achieve strategic organizational goals. Thus, behavioural finance introduces psychology, sociology and other research methods into the study of investment behaviour to explain how investors handle the information and take actions. As their reactions do not follow the traditional principles of decision-making, we try to explain them using fuzzy sets, mathematical sets with the property that an object can be a member of the set, not a member of the set, or any of a continuum of states of being a partial member of the set (Zadeh, 1968).

The research of Yu and Zheng (2015) shows, investors do not always adopt rational behaviour as the traditional finance theory assumed but make many irrational decisions based on individual cognitive and prejudices. In addition, the fact that the traditional model cannot explain the complexity of financial market movements makes the field of behavioural finance boom (Bianchi et al., 2015). Some authors even indicate the shift from behavioural finance to social finance, which studies the structure of social interactions, how financial ideas spread and evolve and how social processes affect financial outcomes (Hirshleifer, 2015).

The empirical contribution of the research is reflected in the introduction and deepening the knowledge of the fuzzy logic usage in financial decision-making. The basic advantage of fuzzy logic is the ability to express mathematically information, which is originally expressed in a verbal form. This makes fuzzy logic a good tool for working with behavioural data. Behavioural finance takes the human factor in making financial decisions into account. For this reason, behavioural finance often uses linguistic data, so fuzzy logic-based methods are appropriate for their description. The strong connection between fuzzy sets theory and behavioural finance theory was proved in the research of Aguiar and Sales (2011).

Behavioural finance, however, is not the only area of finance where fuzzy logic can be used. The fuzzy logic method, described in this paper, can be applied to various financial problems. We use the method to find out the level of the risk tolerance of clients and investor based on their annual income and total assets. We presented the manual calculation of the membership function, using the

model scenario, as well as the software application. The results can be easily applied for the database of clients of the chosen financial institution, which can help offer an appropriate investment product for a group of customers with the same level of the risk tolerance. Moreover, the knowledge of risk tolerance is an important measure of the financial decision-making process. As the information about the financial institutions' client is very sensitive and legislatively protected, we did not get reliable data to verify the model. The limitation of the study comes from the fact, that the study is based on two input variables (annual income and total assets) and other linguistic determinants were not considered. For further research, we suggest to include more qualitative (linguistic) variables into the fuzzy logic process, which may improve the behavioural perception focused on the risk aspects of investment decision-making. An inspiration can be found in the recently published researches focused on hesitant fuzzy sets and methods applied in the decision-making process by Torra (2010), Zhang and Xu (2017), Liao and Xu (2017) or Ayhan (2018).

The paper proves that despite the fact, that fuzzy logic is currently used mainly in technical directions, it is applicable also in financial management. We determine a strong link between fuzzy logic and behavioural finance. This study can be perceived as a stimulus for further research into the use of fuzzy logic in finance, financial management and decision-making. Especially in cases where it is necessary to consider the influence of human and the occurrence of linguistic variables.

Fuzzy sets can accurately model the human decision-making process; their using in modelling behaviour when precision is not necessary is legendary. Behavioural psychology has shown that the fuzzy logic model of human decision-making has validity in the real world.

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Vedenjski vidiki finančnega odločanja

Ozadje in namen: Vedenjske finance so relativno novo, a hitro razvijajoče se področje, ki ponuja razlago ekonomskega odločanja s kognitivno psihologijo, konvencionalno ekonomsko in finančno teorijo. Vedenjske finance iščejo vpliv psihologije na obnašanje finančnih strokovnjakov in posledične učinke na finančne trge. Namen prispevka je raziskati vedenjske vidike sprejemanja finančnih odločitev, saj pomagajo pojasniti, zakaj in kako so trgi lahko neučinkoviti.

Zasnova / Metodologija / Pristop: Mehka logika je odlično orodje za delo z lingvističnimi spremenljivkami, ki se pogosto pojavljajo pri delu z vedenjskimi podatki. Zato analiziramo proces sprejemanja finančnih odločitev z vidika vedenjskih financ, da bi bolje razumeli proces odločanja vlagateljev, ki uporabljajo načela mehke logike za reševanje različnih finančnih problemov.

Rezultati: Rezultati študije kažejo, da je mehka logika uporabna pri reševanju problemov finančnega upravljanja in finančnih odločitev. Poudariti je treba nujnost uporabe mehke logike za vodstvene in finančne odločitve. Raziskave na tem področju kažejo, da je v nekaterih primerih, kot v primeru vedenjskega financiranja, uporaba mehke logike veliko bolj primerna kot uporaba drugih metod (Peters, Aguiar in Sales).

Zaključek: Novost v prispevku je razširiti uporabo mehkih množic na področju sprejemanja finančnih odločitev. Prispevek kaže, da kljub temu, da se mehka logika trenutno uporablja predvsem v tehničnih smereh, je uporabna tudi v finančnem upravljanju, zlasti v primerih, ko je treba upoštevati vpliv človeka in pojavljanje lingvističnih spremenljivk.

Ključne besede: *vedenjska ekonomija; vedenjske finance; mehka transformacija; mehki nizi*

Motivation of Knowledge Workers – the Case of Albania

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Background and Purpose: Very little is known about motivation of knowledge workers in the Western Balkans. There is a widespread belief that money and career opportunities are the most critical motivational factors, but from a pre-study more intrinsic motivational factors also appeared to be important. To develop a better understanding of work motivation, a study was conducted among knowledge workers in Albania, with a special interest in the themes of extrinsic / extrinsic motivation and organizational commitment.

Methodology: After a pre-study and a review of theory, two motivation theories (self-determination theory and organizational commitment) and corresponding instruments (Work Extrinsic and Intrinsic Motivation Scale, respectively Organizational Commitment Questionnaire) were selected. A survey based on purposive homogeneous sampling was applied, resulting in 252 valid questionnaires. The internal consistency of the survey data was tested and resulted in acceptable to good levels.

Results: The findings show that, when knowledge workers are asked about their motivation, they give answers showing that intrinsic motivational factors are more important than extrinsic motivational factors. The study shows that affective commitment - the core factor of organizational commitment - of the respondents is quite high. Correlation analysis of the data shows that across age, gender and number of years of employment, knowledge workers report intrinsic and introjected motivation and affective organizational commitment. Respondents' work positions – professional or leadership – also do not significantly correlate with motivation and organizational commitment.

Conclusion: Given the results on motivational factors and organizational commitment, organizations need to pay attention to the relationship between enhanced motivation and enhanced productivity. Current transactional leadership styles do stimulate employees on the basis of their intrinsic motivation to enhance their productivity, and should be considered too.

Keywords: *motivation; self-determination; organizational commitment; Albania; Western Balkans*

1 Introduction

In a recent review of motivation theory, Kanfer, Frese & Johnson (2017) state that work motivation is a topic of crucial importance to the success of organizations and societies and the well-being of individuals. A motivated workforce represents both a competitive advantage and a critical strategic asset in any work environment (Tremblay, et al., 2017). Although hard to quantify, academic work and common sense tell us that inadequate attention

to 'HRM, management and motivation', leads to far from optimal employee productivity and work values and that good motivation management leads to better performing companies (Boselie, 2014). Many CEE (Central and Eastern European) organizations fail to harvest the benefits of motivation management. Much academic research on work motivation has been carried out in the West, but the subject of motivation, and HRM in general, is under-researched in CEE (cf. Hernaus and Mikulić, 2013; Poór, et al., 2015). This is especially true for the Western Balkan (WB) countries; studies on HRM and topics such as moti-

vation, are rather occasional (Nientied and Shutina, 2017).

After the change of systems during the early 1990's, attention was focused on building institutions, transforming companies and attracting foreign investments. But over 25 years after the change of system, the field of HRM and motivation is still rather out of favour in CEE, both in organizations and research. As an explanation for the scarcity of research on HRM and motivation in CEE, Zientara (2014) argued that the limited attention to HRM in higher education (and subsequently in practice) can be seen as part of the legacy of the past.

The present study on work motivation and management aims to contribute to a better understanding of HRM in WB countries. In 2017, a study was conducted on high performance work practices in Albania, examining to what extent Albanian organisations apply elements of the AMO model (Abilities, Motivation and Opportunities) in their strategic HRM (Nientied and Shutina, 2017). The study revealed that HRM is often limited to basic personnel administration, that in many organisations HRM is viewed as a cost item - not as investing in people to enhance productivity. HRM is task-oriented, not people-oriented. In larger companies, especially subsidiaries of international companies, HRM is better developed albeit that variation was noted. Numerous managers were asked why HRM does not receive more attention. Reflecting on the answers received, it was concluded that the task orientation and mindset of management play an important role. In Albania and its surrounding countries, pay, career opportunities and respect for the labour code are believed to be important factors that influence work motivation. But in the preparatory interviews for the present study, points such as pride of work, identification with work, achievement in professional life and commitment to the organisation were also mentioned. These answers and further observations gave impressions on work motivation and, given the lack of data and understanding of work motivation in Albania, instigated us to carry out research on work motivation and organisational commitment.

The field of work motivation studies in Albania is still undeveloped. Shoray and Llaci (2015) discuss job satisfaction in the second-level bank system in Tirana, Zhilla (2013) applied the Job Diagnostic Survey among university staff, and Suma and Llesha (2013) discussed job satisfaction and organizational commitment in a municipal organization. Apart from these studies (that deal with job satisfaction rather than motivation), no published research on employee motivation in Albania was found. For other WB countries, also very few studies could be discovered. In CEE countries outside the WB, studies have been carried out. For example, Damij (et al., 2015) found that Slovenian knowledge workers are stimulated by a series of factors like relationships with superiors and colleagues, sense of achievement, helpful colleagues, personal growth, largely in contrast to the traditional understanding that mainly emphasizes money and prestige as motivation factors.

Hajdukova, Klementova & Klementova (2015) examined a range of satisfaction factors in their study in Slovakia. Jordan et al., (2017) included three CEE countries in their study on job satisfaction and organizational commitment in higher education organizations. Of course, Albania is quite different from Slovenia or Slovakia, but personal work motivation factors do not need to be. Therefore, the plan was to conduct a survey on motivation and organizational commitment, identify socio-economic forces in the context, and try to discover possible patterns and correlations with personal and organizational characteristics. The focus of the research is on Albania. Obviously, this signifies a limitation – a comparison with other Western Balkan countries would be interesting, but also requires a research collaboration in WB countries and research funding. This was not available for this study.

The definition of work motivation of Kanfer (1990) was used as point of departure: “the psychological processes that determine (or energize) the direction, intensity, and persistence of action within the continuing stream of experiences that characterize the person in relation to his or her work.” The present study focuses on knowledge workers, a notion lacking a clear definition. It is taken in a broad meaning as workers whose main capital is knowledge and information processing, and work with 21st century skills such as critical thinking, problem solving, research, creativity, communication, and ITC literacy. The focus on knowledge workers implies a limitation, but the choice was deliberate for two reasons. First, this segment of workers adds high values to companies and is therefore a prime target group for management in companies wanting to increase productivity and commitment. Second, also in WB countries' economies, the future of jobs is not in production and low-skilled or middle-skilled level labour, but in the knowledge and creative sectors (WEF, 2016; Nientied and Karafili, 2016; Lewandowski, 2017) as popular authors such as Pink (2011) and Hamel (2012) argued before. Morgan (2014) identifies five trends that shape the future of work: new behaviours fashioned by social media and the web, technologies, the millennial workforce with new attitudes and expectations, mobility regarding place of work and globalization. Morgan (2014) asserts that this requires new relationships between management and employees, and that managers should take up roles of transformational leaders. This should also be relevant to companies in the WB, for this the segment of knowledge workers cannot just be managed in a transactional manner if a company wants to keep up motivation levels.

The following two research questions were formulated to guide the empirical research: - which are personal motivation factors (extrinsic / intrinsic) of Albanian knowledge workers, ‘why do they go to work’?; and, 2) do Albanian knowledge workers feel committed to their work organization?

In the next chapter, theory of motivation will be briefly reviewed. Textbooks give good overviews of different

motivation theories (e.g. Kanfer et al., 2008a), that need not be repeated. The theoretical focus of this study is on the models selected for the present study. In chapter 3 the methodology of the study will be explained, before attention will turn to the results of the research in chapter 4, consisting of a context description and a presentation and analysis of the survey results. In the final chapter, the main findings of the study are discussed and recommendations for further research and for organizational practice are submitted.

2 Review of theory

Mullins (2010) made a three-fold classification for the study of motivation to work. He distinguishes: i) an instrumental orientation looking at economic rewards etc., ii) a personal orientation looking at the intrinsic satisfaction derived from the work itself and personal growth, and iii) a relational orientation, with a focus on social relationships. Kanfer, Chen and Pritchard (2008b) have organized motivation studies along 3 C's: content, context and change. There are many competing theories attempting to explain the nature of motivation (Mullins, 2010, 259). They all help to try and clarify the behaviour of certain people at certain times. Mullins (2010) adds that age plays a role: younger people in their first job have different needs than people at mid-career or late career positions who have limited opportunities for further advancement. However, Kooij (et al., 2011) found that age-related differences in work motivation is a quite complex question. Mullins (2010) also wondered what the relationship is between job satisfaction and motivation and performance. There are many more questions about and debates around motivation theory, including the validity of motivation concepts across cultures, measurement issues of motivation (Ployhart, 2008), whether intrinsic motivation can be distinguished in practice from extrinsic motivation, the relationship between motivation and organisational commitment, etc. (Latham, 2012). The difference between motivation as intention and actual behaviour in the organisation should also be mentioned. That is even more so in job satisfaction research: the concept of job satisfaction assumes that satisfied employees perform better. This, however, is not always the case; practices vary. People may be satisfied with their job because the hours are good, or they can lead an easy life.¹ In their meta-review of motivation theories, Kanfer, Frese & Johnson (2017) mention the research – practice gap: given the diverse field of motivation studies and the various approaches, leadership in organizations cannot be well informed about management of motivation and tend to 'pick and choose' a model based on ad-hoc considera-

tions. Meanwhile, motivation theory tends to develop new concepts such as engagement and organizational citizenship behaviour (OCB) and employee trust (Boselie, 2014).

Kanfer, Frese & Johnson (2017) distinguish three types of content-oriented motivation theories; universal motives (needs as internal forces), intrinsic motivation and justice motives. Intrinsic motivation theory (self-determination theory) redresses some shortcomings of need theories, the latter identify needs but do not predict behaviour, whereas self-determination theory does through intrinsic motivation. Justice motives address the desire for fairness and are less relevant for the present study. Regarding organizational commitment, Mercurio (2015) concludes that scholars studying commitment still have not come to an agreement as to the nature of organizational commitment and how it develops, but affective commitment - the emotional attachment of an individual to the organization - seems to be at the core of organizational commitment. Therefore, a widely used model for organizational commitment was selected, as will be explained below. For the present research on Albania, it was opted for two content-based approaches to motivation: the self-determination theory and the model of organizational commitment.

Self-determination theory (SDT) focuses on the 'why of behaviour' (Deci and Ryan, 2000, 229; Ryan and Deci, 2000). SDT maintains that all human beings have three basic psychological needs that must be satisfied for them to function optimally. They are the needs for competence or effectance, relatedness or belongingness, and autonomy or self-determination, which are essential for psychological health and well-being and facilitate effective functioning in social setting (Deci, Olafsen & Ryan, 2017). This basic-needs proposition was not formulated from clinical observations or philosophical assumptions, but was formulated empirically while studying the conditions under which people tend to thrive (Deci and Ryan, 2012). The basic premise of SDT is that people are intrinsically willing to integrate themselves in the environment and to grow. The (social) environment of a person influences this tendency to personal growth and integration. SDT makes a distinction between intrinsic motivation (doing activities for their own sake because one finds the activity inherently interesting and satisfying) and extrinsic motivation (i.e., doing an activity for an instrumental reason, like getting a monetary or personal reward). Evidence shows, explains Pink (2011), that for mechanical jobs, extrinsic motivation works (e.g. more pay for more work), that for work with a cognitive element, intrinsic motivation is required. Extrinsic rewards for most intrinsically motivated people in jobs even have an adverse effect, if basic labour conditions are not an issue any more (e.g. salaries are in accordance with

¹ Some companies have an 'employee first' policy, with a basic premise that contented or happy employees perform better. South West Airlines is a well-known example. In such companies, serious demands are made on employees and strict selection procedures are in place, and teams are responsible for performance. It is far from a free-floating culture.

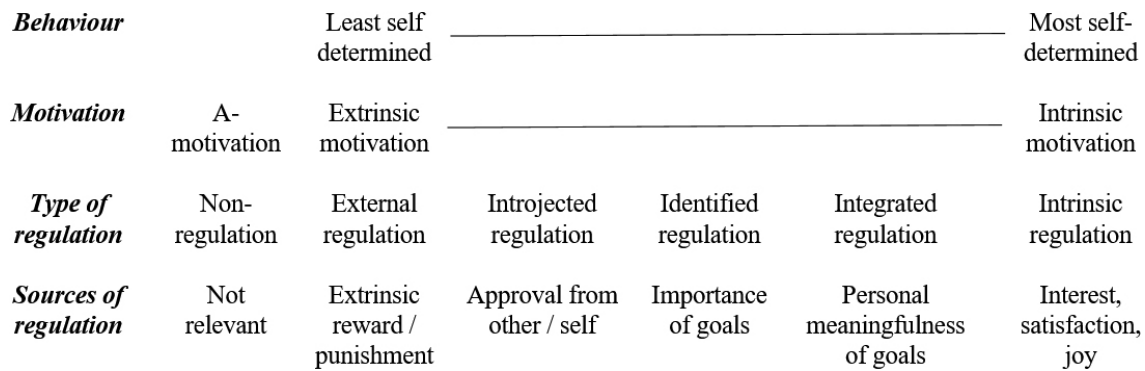


Figure 1: Self-Determination Continuum

Source: Authors, based on Deci and Ryan (2000), Ryan and Deci (2000), Clayton (2015).

market levels). This is not a law: some top managers are highly rewarded and still want to receive an even higher reward. And some low-paid workers in, say, routine agricultural work, take pride in their work and enjoy it. SDT has created a continuum from 'a-motivation' (passiveness, lack of intention) to purely intrinsic motivation. Figure 1 illustrates the types of motivation, arranged from left to right in terms of the extent to which the motivation for one's behaviour emanates from one's self.

Intrinsic motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence like a bonus. When intrinsically motivated, a person is moved to act for the fun or challenge entailed rather than because of external pressures or rewards. Extrinsic motivation is defined as the doing of an activity in order to attain some separable outcome. Extrinsic motivation thus contrasts with intrinsic motivation, which refers to doing an activity simply for the enjoyment of the activity itself, rather than its instrumental value. SDT proposes that extrinsic motivation can vary greatly in the degree to which it is autonomous (Ryan and Deci, 2000). Externally regulated behaviours are performed to satisfy an external demand or obtain an externally imposed reward. Introjected regulation describes a type of internal regulation that is still quite controlling, because people perform such actions with the feeling of pressure in order to avoid guilt or anxiety or to attain ego-enhancements or pride. A more autonomous, or self-determined, form of extrinsic motivation is regulation through identification, when a person has identified with the personal importance of a behaviour and has thus accepted its regulation as his or her own (e.g. behaviour compliant with safety regulations, because a person acknowledges that this is a right way of working). The most autonomous form of extrinsic motivation is integrated regulation, that occurs when identified regulations have been fully assimilated to the self, through self-examination and bringing new regulations into congruence with one's other values and needs. Ryan and Deci (2000) pose that intrinsic motivation leads to optimal func-

tioning – if personal motivation and the job are aligned. External regulation leads to negative outcomes (unless workers have no free will). SDT is not a developmental scale or ladder in the sense that individuals progress along it in specific stages. New behaviour may be internalised at any point along the continuum depending on factors such as organisational context and an individual's prior experiences. And due to changing circumstances in personal life, employees may lose (or gain) work motivation.

The second model selected is the model of organizational commitment. This is employees' state of being committed to assist in the achievement of the organization's goals, and involves the employees' levels of identification, involvement, and loyalty. Mayer and Allen (1997) state that commitment is experienced by the employee as three simultaneous mindsets encompassing affective, normative, and continuance organizational commitment, and are predictors of performance, absenteeism and organizational citizenship. *Affective commitment* reflects commitment based on emotional ties the employee develops with the organization primarily via positive work experiences. *Normative commitment* reflects commitment based on perceived obligation towards the organization, for example rooted in the norms of reciprocity. *Continuance commitment* reflects commitment based on the perceived costs, both economic and social, of leaving the organization (Jaros, 2007). Starnes and Truhon (n.d.) summarized a number of studies that made correlations between organisational commitment and items such as age, sex and other personal characteristics, job attitudes, job characteristics and relationships with co-workers and supervisors. Solinger, Van Olffen & Roe (2008) criticize the conceptual side of the organizational commitment model and argue that general organizational commitment can best be understood as an attitude regarding the organization, while normative and continuance commitment are attitudes regarding specific forms of behaviour (i.e., staying or leaving). They suggest that the three-component model of organizational commitment fails to qualify as general model of organizational

commitment, but instead represents a specific model for predicting turnover. In other words, affective, normative, and continuance commitment cannot be considered as components of the same attitudinal phenomenon (cf. Mercurio, 2015). This study opted for employing the organizational commitment model but will not consider the three components together as organizational commitment. The components are treated individually and be called factors instead of components.

3 Methodology

First, a pre-study consisting of interviews and a literature search on motivation in CEE and the WB was conducted. 16 mid-career professionals (knowledge workers) were interviewed with the help of a short item list, pertaining to motivation, job satisfaction, career ambitions, organizational commitment and ideas or plans to work abroad. These interviews revealed that motivation is multi-faceted, that professionals feel (emotional) commitment to their organisation such as pride and relatedness, and that professionals would wish for higher pay but acknowledge that 'the market is as it is', as one of the respondents described the situation. After the literature study, a choice was made to apply SDT and OCQ (organizational commitment questionnaire). From the review of theory, it became clear that a proper contextualization regarding socio-economic forces is useful to better understand work motivation.

Regarding SDT, the scale developed by Tremblay (et al., 2009) was selected, covering factors from a-motivation at one end of the scale, to intrinsic motivation at the other end of the scale, as Figure 1 showed. This instrument (Work Extrinsic and Intrinsic Motivation Scale - WEIMS) is an 18-item measure of work motivation and suitable to be applied in different work environments. Interesting to add is that Deci (et al., 2001) compared motivational processes in American and Bulgarian organizations and found that their SDT model was applicable across cultures. Gagné (et al., 2014) found evidence that the SDT functions well in seven languages. The starting question of WEIMS is 'why do you do your work'. In Annex 1 the questionnaire with 18 item list is presented, and comparing it with the original (Tremblay et al., 2009, 226), slight adaptations to the Albanian context can be found to enhance user validity.

A set of questions based on the OCQ was added, measuring the factors of affective, continuance and normative commitment, based on Meyer and Allen (1997), and improved by Jaros (2007). Jaros' questionnaire was made more concise after a first field testing. For example, the statement "I do not think that wanting to be a "company man" or "company woman" is sensible anymore." (original Q.8 Normative Commitment) was skipped because these terms are not understood in Albania. 12 accessible statements were selected - four per category - and tested

in the field, with a satisfactory result. Reduction of the number of questions was also vindicated by the Kanning and Hills's handling of the OCQ, who use 15 items. In the present survey, an additional open question asks for possible actions the respondents' companies could undertake to enhance work motivation and commitment. The selection of items and metric information of questionnaires are presented in chapter 4 (tables 2 and 3).

The questionnaire was filled out by professional specialists and managers employed in organizations with > 10 employees. They are working in various sectors, from services such as banking, tourism and retail, to sectors like energy and medical, and have roles as specialists in their field, as project manager or team leader / manager. Questionnaires have not been sent out via e-mail because that leads in our experience to rather substandard quality of information in Albania. Respondents are very cautious with regards to anonymity and they tend to give affirmative answers to questionnaires sent by mail. Moreover, non-response tends to be high. Albania is a low-trust society, an attribute rooted in the country's past. Distributing questionnaires through a network (of trusted people) and in hard-copy gives much better results. Therefore, purposive homogeneous sampling was applied. First, the draft questionnaire was discussed with professionals in the field (an expert panel was not possible because Albania has no academic experts in HRM and motivation studies), then tested among a restricted number of observations and no major problems were found except for the need to rephrase some OCQ items. Then, after a briefing of the objective and the implementation of the study, questionnaire forms were given to post-graduate students studying in Polis University's executive MBA, to staff members working in Polis University and in Co-PLAN Institute for Habitat Development in a first stage. They were asked to fill out the questionnaire themselves and in the second stage to give questionnaires to people in their network, have the questionnaires filled out and have a discussion with the respondents about their scores, to check whether they had understood everything and to discuss about the final open-ended question (that also functioned as an overall check on the answers given). Post graduate students and employees of Polis and Co-PLAN are typically in the age category of 28 to 40 years, have positions with professional or managerial responsibilities, and jobs that can be classified as knowledge worker. The survey sample is not representative for the whole Albanian work force and not even for the segment of knowledge workers in the country. Most of the interviewees (MBA students and Polis – Co-PLAN staff) live in the Tirana – Durrës region which is the economically most advanced region of Albania. They have approached respondents from organizations in their region and therefore, the survey conducted has a bias towards this region and to more modern and larger organizations. The government sector was excluded intentionally (motivation and commitment have different characteristics), while

semi-public companies and not for profit institutions, were included. The survey part was conducted during January – February 2018 while the (statistical) analysis was done in March – April 2018. In total, 252 valid questionnaires were processed. With regards to validity and reliability of the study, two limitations mentioned are: - the sample has an unknown bias and is not representative for the country, or for the category knowledge workers in general; - validated questionnaires have been slightly adapted to fit the Albanian context. Despite these two limitations, the face-to-face interviews to fill the questionnaires ensure that the quality of information gathered is much higher than in an on-line survey in the Albanian context. Also, as a first motivation survey, the sample serves the goal of the study.

4 Results

4.1 The context

In Albania there are some common features that might affect motivation, broadly driven by historical similarities. For the purpose of this study, first socio-cultural forces are sketched. They may be more universal for the CEE; Holden and Vlaiman (2013) -distinguish comparable forces in their contextualization of HRM and talent management in Russia. Each of the points mentioned would warrant a fuller elaboration, but that would be beyond the scope of this paper. For the contextualization of this study, some important trends in Albanian society are the following:

Slowly picking up economy, more exposure to globalization

Unlike more developed former socialist countries now in the EU, Albania and its neighbours experienced a limited modernisation of higher education, inflow of international companies, and EU support and influences. As a small, formerly isolated country, Albania still has a rather backward economy with limited export capacities. The domestic nature of competition was identified by Prašnikar (et al., 2012) as a main factor in this regard. The external trade balance of Albania remains unfavourable: in 2017 it was – 15.1 % of GDP (World Bank, 2018). Innovation in Albania is still at an early stage of development (Nientied and Karafili, 2016; Matusiak and Kleibrink, 2018). Albania is now connected to the world through the web, and Albanians travel and study abroad – they tend to become dissatisfied with the general economic and business climate in Albania.

High un(der)employment, exit of knowledge workers

Unemployment decreases but remains high; the unem-

ployment rate in 2017 was 13.8% and the youth unemployment rate was in 2017 25.9% (World Bank, 2018). In view of the perceptions of a lack of jobs in Albania, many Albanian young people, given a chance and irrespective of educational level, would opt for a job abroad (RCC, 2017), as many already did (Vracic, 2018). In Albania, high un(der)employment has many implications: people accept jobs way below their educational level,² they can be replaced easily when they request higher payment, trainings or other fringe benefits. These labour market dynamics have shaped firms' behavioural attitudes (cf. Nientied and Shutina, 2017).

The tradition of bossdom and mistrust

Albania management is broadly traditional and masculine. In the Russian case, Holden and Vlaiman (2012, 136) use the phrase 'entrenched bossdom', which is a brand of management that somehow combines authoritarian sternness with paternalism, frenzied networking with isolation of those at the top who decide everything independently from the workforce. This is relevant (and not unique to Russia). They quote an article from the Economist, that speaks of "The long life of homo Sovieticus" referring to 'mental software', and it is the persistence of the coercion and brutishness that came with Soviet totalitarianism rather than a deep yearning for the good old days of central planning and communism. In Albania, this culture is rooted too and still present in its own fashion. In a society with low trust levels, traditional bossdom in many organizations and high unemployment, organizational commitment may have a special character.

Old and new co-exist

Albania has good examples of modern HRM, practices comparable to modern organisations in the EU, where managers pay attention to their employees and employee productivity. They can be found in subsidiaries of international organisations wanting to have the best people in the market, in modern Albanian organisations, especially those who need people and skills that are not readily available (like IT specialists, creative designers and social media specialists, certain academicians, etc.) and in Albanian organizations with modern leadership and people-centred values. But traditional HRM practices are widely found – HRM limited to personnel administration, with 'bosses' selecting staff in a paternalistic / political rather than a merit-based manner – and transactional leadership styles.

² See <http://www.balkaninsight.com/en/article/diploma-factories-kosovo-and-albania-churn-out-graduates-with-few-prospects-11-08-2015-1>

4.2 Survey results

Respondents

The sample was composed of N=252 observations, out of which 163 were women and 89 were men. The age distribution of the respondents is given in table 1. Respondents' age varies from a minimum of 19 years old to a maximum age of 60 years old, with an average age of 31.1 years.

Table 1: Age respondents (n=252)

Age group	%
18-29 years	50.3%
30-40 years	38.8%
41 years and older	10.8%

Based on the gender composition and age group distribution of observations, the sample presents an unknown bias towards women and towards younger age categories. Since the total number of knowledge workers is not known, it is difficult to specify exactly the nature of this bias. The sectoral composition of the sample shows that 79.4% of the respondents working in the private for-profit sector, 13.9% in private not for profit and only 6.7% of the observations in the semi-public sector. About 35.7% of the respondents in the sample has a leadership role within the organization while the rest are knowledge workers without leadership role.

Tables 2 and 3 present the descriptive statistics of the questionnaire statements of the WEIMS part and the OCQ part respectively.

The internal consistency of the survey data was tested using Cronbach's alpha. This test was applied for each set of variables explaining the 6 types of regulation of the WEIMS self-determination continuum and the 3 factors of commitment; affective, continuance and normative commitment. The internal consistency results are at good levels (>0.7) for integrated and introjected regulation and a-motivation, while close to a lower acceptable level in the case of intrinsic, identified and external regulation. Table 5 below shows that the factors of affective, continuance and normative commitment, indicated adequate levels.

In Table 6, the questions have been assembled to WEIMS factors, and the descriptive statistics of the WEIMS factors are presented.

From the results of the survey it was found that motivation is more towards the intrinsic side than conventional understanding suggests - when knowledge workers are asked questions about their motivation, they give answers that show that intrinsic motivational factors are more important than extrinsic motivational factors. In the open question of the survey questionnaire, payment was

mentioned quite frequently as a stimulus of motivation, articulated in different terms like bonuses, higher salaries, performance-based payment schemes etc. Alongside monetary rewards, other non-monetary aspects mentioned to enhance motivation include - educational and other personal development opportunities, - carrier paths within the organization, - participation in decision making, etc.

Regarding the organizational commitment factors (table 7), it turns out that the affective commitment - the core factor of organizational commitment - of the respondents is quite high. This shows that knowledge workers don't just go to work to produce, but also because it gives them a sense of belonging, membership and pride. Continuance commitment and normative commitment are also positive but have lower average scores and higher standard deviations. This suggests that a positive attitude (affective commitment) toward the job does not mean that employees stop looking for better opportunities. It is, as will be shown later in table 8, only weakly related to age. This can be understood in the context of the Albanian employment market, with mostly temporary contracts that are to be renewed every year. People may work many years for their organizations, but most of them lack job security.

A correlation analysis (Table 8) shows that correlations between motivational and commitment factors and characteristics as gender, age and number of years in the present organization are limited.

With age, external regulation and integrated regulation correlation tend to go up a bit, but correlations are low. Continuance commitment correlates positively but not strongly, with age and number of years in the present organization, and this is line with expectations. With regards to position in the organisation, whether or not the respondent had a leadership position, correlations hardly differ between employees with and without a leadership position. Respondents with a leadership position scored a bit lower (but significant at 0.05 level) on the factors of intrinsic motivation and identified motivation. Overall, it is interesting to see that correlations between factors of motivation and commitment on the one hand, and characteristics of age, number of years in the organization and gender, are low. The finding of age-related to motivation, confirms the observations of Kooij (et al., 2011) that age-related differences in work motivation is a complex question - among Albanian knowledge workers age does not play a significant role.

5 Discussion and conclusions

This research found that motivation is much more towards the intrinsic side of the extrinsic - intrinsic continuum than conventional perceptions suggest. When questions are asked about motivational details, extrinsic motivation (money and prestige) is not the most important motivational factor (when regular market salaries are paid). In the

Table 2: Descriptive statistics responses WEIMS

Scale: 1 = don't agree at all, 4 = neither agree or disagree, 7 = agree completely. n=252.

Statement 'Why do you go to work' (WEIMS)	Ave.	St.dev.
Q1: Because I chose this type of work to attain my career goals	5.27	1.76
Q2: For the income it provides me	5.18	1.42
Q3: I don't know why I still do this job, I don't seem to be able to manage the important tasks of the job	1.54	1.21
Q4: Because I derive much pleasure from learning new things	5.58	1.36
Q5: Because my work has become a fundamental part of who I am	4.96	1.71
Q6: Because I want to succeed at this job - if not, I would be very ashamed of myself	4.08	2.08
Q7: Because this is the type of work I chose to attain a certain lifestyle	4.66	1.72
Q8: For the satisfaction I experience from taking on interesting challenges	5.55	1.41
Q9: Because it allows me to earn money	5.01	1.51
Q10: Because it is part of the way in which I have chosen to live my life	4.79	1.72
Q11: Because I want to be very good at this work, otherwise I would be very disappointed	4.45	2.06
Q12: I don't know why I still do this work, we have very unrealistic working conditions	1.65	1.27
Q13: Because I want to be a 'winner' in life	4.93	1.80
Q14: Because it is the type of work I have chosen to attain certain important objectives	5.26	1.53
Q15: For the satisfaction I experience when I am successful at doing difficult tasks	5.43	1.46
Q16: Because this type of work provides me with security	4.65	1.69
Q17: I don't know why I still do this work, too much is expected of us	1.98	1.62
Q18: Because this job is a part of my life	4.93	1.76

Table 3: Descriptive statistics motivation and commitment statements

Scale: 1 = don't agree at all, 4 = neither agree or disagree, 7 = agree completely. n=252.

Statement	Ave.	Std.dev.
Q1 I feel a strong sense of belonging to this organization	5.28	1.593
Q2 If I wasn't a member of this organization, I would be sad because my life would be disrupted	2.52	1.806
Q3 I feel I would be letting my co-workers down if I wasn't a member of this organization	2.90	1.824
Q4 I am very happy being a member of this organization	5.68	1.404
Q5 I am loyal to this organization because I have invested a lot in it, emotionally, socially, and economically.	5.37	1.709
Q6 I feel that I owe this organization quite a bit because of what it has done for me	4.36	1.815
Q7 I feel like "part of the family" in my organization	5.23	1.694
Q8 I am dedicated to this organization because I fear what I have to lose in it.	3.17	1.765
Q9 I would feel guilty if I would leave my organization now	4.15	2.035
Q10 It makes me proud to be an employee of this organization	5.63	1.492
Q11 I feel that it is more difficult leaving this organization over time	4.73	1.766
Q12 My organization deserves my loyalty because of its treatment towards me	5.29	1.683

Table 4: Cronbach's alpha's WEIMS factors (n=252)

	Questions	Cronbach's alpha
Intrinsic motivation	Q4, Q8, Q15	0.669
Identified regulation	Q1, Q7, Q14	0.696
External regulation	Q2, Q9, Q16	0.612
Integrated regulation	Q5, Q10, Q18	0.747
Introjected regulation	Q6, Q11, Q13	0.789
A-motivation	Q3, Q12, Q17	0.740

Table 5: Cronbach alpha's Commitment Organizational commitment factors (n=252)

	Questions	Cronbach's alpha
Affective commitment	Q1, Q4, Q7, Q10	0.852
Continuance commitment	Q2, Q5, Q8, Q11	0.686
Normative commitment	Q3, Q6, Q9, Q12	0.706

Table 6: Descriptive statistics WEIMS factors (7 point Likert scale) (n=252)

	Questions	Average	Std.dev.
Intrinsic motivation	Q4, Q8, Q15	5.52	1.41
Identified regulation	Q1, Q7, Q14	5.06	1.67
External regulation	Q2, Q9, Q16	4.95	1.54
Integrated regulation	Q5, Q10, Q18	4.89	1.73
Introjected regulation	Q6, Q11, Q13	4.48	1.98
A-motivation	Q3, Q12, Q17	1.72	1.37

Table 7: Organizational commitment factors (7 point Likert scale) (n=252)

	Questions	Average	Std.dev.
Affective commitment	Q1, Q4, Q7, Q10	5.45	1.55
Continuance commitment	Q2, Q5, Q8, Q11	3.95	1.76
Normative commitment	Q3, Q6, Q9, Q12	4.18	1.84

open questions, payment was mentioned quite frequently as a motivational instrument, but so were educational and other personal development opportunities. The interpretation of the survey results showed that across age, gender and number of years of employment, knowledge workers in Albania report intrinsic motivation to go to work - intrinsic and introjected motivation and affective commitment. The results are in line with the findings of Damij et al. (2015).

Looking at the survey results and the contextualization given in section 4.1, the level of intrinsic / identified motivation and commitment to the organization was perhaps higher than expected based on conventional wisdom, but it was in line with the impressions of the pre-study. Whether

employees tend to adjust to the organizational reality and try to make the best of it (and show more intrinsic motivation) cannot be explained by this study – this would require in-depth qualitative research. From the interviews during the pre-study, the impressions of the researchers were that knowledge workers know well whether their salary is in accordance with salary levels in the labour market, and they accept this reality (or search for another job that pays better). Work abroad is an appealing option for many, but this cannot be ascribed to salary levels only. Many educated people in Albania are disappointed with the political climate, corruption and issues of rule of law and take the future for their children into consideration, not just the salary levels.

Table 8: Pearson correlations

** Significant at 0.01 level, * Significant at 0.05 level. n=252.

	Gender	Age	No. of years in present organization
Gender	1		
Age	0.008	1	
No of years in organization	0.007	0.575**	1
Intrinsic motivation	0.181 *	-.022	-0.093
Identified regulation	0.084	0.137	0.012
External regulation	0.162	0.211**	0.180
Integrated regulation	0.107	0.212**	0.138
Introjected regulation	0.067	0.024	-0.004
A-motivation	-0.121	0.044	0.055
Affective commitment	0.092	0.024	0.068
Continuance commitment	0.104	0.204**	0.222**
Normative commitment	0.056	0.147	0.094

This study on work motivation calls for further research. A relevant point for study is the correlation between satisfaction of payment and types of motivation – in this study the sensitive question of satisfaction with salary was not included. This question is difficult to uncover in a reliable manner in a questionnaire-based survey. A second follow up research could focus on the relationship between motivation, work autonomy and performance, to study whether the statement holds that if one has autonomy, and the results then depend more on one's own efforts and the individual feels more personal responsibility for performance, one is motivated to perform better. Various theoretical models could be used for such study. A third option concerns other target groups of the working population. In the introduction, it was argued that knowledge workers add high value to companies and this segment is therefore a prime target group for management in companies wanting to increase productivity and commitment. As the economy modernizes and digitalisation and automation increase, the percentage of knowledge workers will further increase, as WEF (2016) and Schwab (2018) have argued. Yet, motivation among employees who are not typical knowledge workers is important too. Finally, this study was focused on the Albanian situation, and a comparison with other WB countries would be interesting.

For organisational practice it will be advantageous to popularize the topic of motivation and role of leaders / managers in fostering motivation. Two points are particularly relevant; the first is that leaders should be interested in the relationship between enhanced motivation and enhanced productivity – whether enhancing motivation is likely to pay off and what the implications could be for leadership styles. The second is that the so-called 21st century skills become increasingly important and are considered to spearhead the economic future of countries like

Albania (cf. WEF, 2016). Leaders and employees could invest in developing these skills. This also requires new educational solutions from universities and other higher education institutes.

In more general theories of work motivation, the effects of leaders on work motivation have been at the heart of many leadership theories and models, but leadership itself is left out (Zaccaro et al., 2008). In the dynamic relationship manager – employee exchange, leadership develops into a transactional process – employees are not stimulated on the basis of their intrinsic motivation. In such relationship with an autocratic leadership style, employees will adjust their behaviour, and tend to show motivation when the manager is around (Zaccaro et al., 2008). The findings of Damij et al. (2015) on the creation of working conditions that foster good relations with colleagues and superiors, opportunities for personal growth, and good organization within the organization, should be incorporated into the study design too. Such leadership studies are, to our knowledge, absent in the Western Balkans.

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Motivacija znanjskih delavcev - primer Albanije

Ozadje in namen: O motivaciji delavcev na področju znanja na Zahodnem Balkanu je zelo malo znanega. Obstaja splošno razširjeno prepričanje, da so zaslužek in poklicne možnosti najbolj kritični motivacijski dejavniki, toda predhodne študije so nakazale, da so pomembni tudi notranji motivacijski dejavniki. Za boljše razumevanje motivacije za delo je bila v Albaniji izvedena študija med delavci, ki se ukvarjajo z znanjem, usmerjena na zunanje motivacijske dejavnike in na organizacijsko zavezanost.

Metodologija: Po predhodni študiji in pregledu teorije sta bili izbrani dve motivacijski teoriji (teorija samoodločanja in organizacijska zavezanost) in ustrezni instrumenti (delovna ekstrinzična in intrinzična motivacijska lestvica oziroma vprašalnik za organizacijsko zavezanost). Izvedena je bila raziskava, ki temelji na namenskem homogenem vzorčenu. Zbrali smo 252 veljavnih vprašalnikov. Preverjena je bila notranja skladnost podatkov raziskovanja.

Rezultati: Ugotovitve kažejo, da ko so delavci, ki se ukvarjajo z znanjem na vprašanja o njihovi motivaciji, dajo odgovore, ki kažejo, da so notranji motivacijski dejavniki pomembnejši od zunanjih motivacijskih dejavnikov. Študija kaže, da je afektivna zaveza - osrednji dejavnik organizacijske zavezanosti - zelo visoka. Korelacijska analiza podatkov kaže, da anketirani strokovnjaki, ne glede na starost, spol in število let zaposlitve, identificirajo kot najmočnejši dejavnik notranjo in introjektirano motivacijo ter afektivni organizacijsko zavezanost. Delovna mesta anketirancev - strokovna ali vodstvena - prav tako bistveno ne vplivajo na motivacijo in organizacijsko zavezanost.

Zaključek: Rezultate raziskave motivacijskih dejavnikov in organizacijske zavezanosti kažejo, da morajo organizacije posvetiti pozornost razmerju med večjo motivacijo in večjo produktivnostjo. Današnji slogi transakcijskega vodenja spodbujajo zaposlene na podlagi njihove notranje motivacije za povečanje produktivnosti in jih velja upoštevati.

Ključne besede: *motivacija; samoodločanje; organizacijska zavezanost; Albanija; Zahodni Balkan*

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Occupational Stress, Symptoms of Burnout in the Workplace and Work Satisfaction of the Age-diverse Employees

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Background and Purpose: Age diverse employees are faced with different types of occupational stress and different symptoms of burnout when carrying out their work. Therefore, the role of age in job design and implementation of work should not be ignored. The main aim of this paper is to investigate the age differences of occupational stress and symptoms of burnout of employees and to analyze the impact of occupational stress, symptoms of burnout and age on employees' work satisfaction.

Methodology: The paper is based on research that includes a survey of employees in two age groups: younger employees under 50 years of age and older employees between 50 to 65 years of age. Factor analysis was used to form the constructs of occupational stress, symptoms of burnout and employees' work satisfaction. The non-parametric Mann-Whitney U test was used to test differences in the obtained constructs of occupational stress and symptoms of burnout in the workplace between two independent groups. The multiple regression analysis was used to examine the impact of occupational stress, symptoms of burnout and age on employees' work satisfaction.

Results: The results show there are statistically significant differences in occupational stress and symptoms of burnout in the workplace between older and younger employees. On average, younger employees perceived higher levels of occupational stress and burnout as compared to the older group. Research results also show that occupational stress, behavioral symptoms and emotional symptoms of burnout, as well as age, have a significant impact on employees' work satisfaction.

Conclusion: Managing diversity requires a strategic approach to managing people at work. Therefore, this research adds to the body of knowledge by pointing out the relationship between age and occupational stress and burnout symptoms. Because the role of age in job design has largely been ignored, these relationships have not been studied enough.

Keywords: *Occupational stress; burnout; symptoms of burnout; age-diverse employees; work satisfaction*

1 Introduction

Job design is of special importance in contemporary human resource management. It is essential to design jobs so that stress can be reduced, motivation can be enhanced and the satisfaction of employees and their performance can be improved to ensure that organizations can effectively compete in the global marketplace (Garg and Rastogi, 2006). Stressful, depressed and dissatisfied employees are not able to obtain the same quality level of work and productivity as those employees with low stress and high satisfaction (George and Zakkariya, 2015). It is essential that the employees' psychological aspects are considered. Employers should create a safe, stress-reduced environment in which to work.

Further, it has become important to understand the role of individuals' differences in examining the effects of job characteristics on job attitudes (Morgeson and Humphrey, 2006). This means that job characteristics are not experienced in the same way by all groups of workers (Zaniboni et al., 2014). Due to demographic changes in most industrialized countries, the average age of working people is continuously increasing and the workforce is becoming more age diverse (Hertel et al., 2013). Zaniboni et al. (2014) demonstrated that the role of age in the relationship between job characteristics and job attitudes is important; with the ageing population it is necessary to see how jobs might be redesigned to enable people to continue to work successfully. It is also appropriate to examine the interplay between age and work characteristics because people generally spend a significant part of their lifespan working, and, therefore, have ample opportunity to display these adaptive processes throughout their working lives. Yet the role of age in job design has largely been ignored (Truxillo et al., 2012). Satisfied employees are a vital prerequisite for a "healthy" company (Halkos and Bousinakis, 2010); it is important that employers create a safe and friendly work environment (George and Zakkariya, 2015).

Demographic changes caused by the ageing of the population have an impact on organizations and the age structure of their employees; organizations face new challenges in the field of human resources management since employees belonging to different age groups also perceive their working environment differently and react differently. The first step towards the adequate management of age diverse employees is to create an appropriate working environment that dictates the successful result of ageing for employees, and, thus, facilitates the achievement of goals, performance and competitiveness of the company (see, e.g., Jolynn et al., 2011; Ilmarinen, 2006). Robertson and Cooper (2010) found that low levels of stress, high levels of psychological well-being and the work satisfaction of older and younger employees play a central role in delivering the important outcomes associated with success in companies.

This paper aims to answer the following research questions: (1) RQ1: Are there statistically significant differences in occupational stress in the workplace of older employees as compared to younger employees in Slovenian companies? (2) RQ2: Are there statistically significant differences in the symptoms of burnout of older employees as compared to younger employees in Slovenian companies? (3) RQ3: Do occupational stress, symptoms of burnout and age have a significant impact on the employees' perceived work satisfaction?

Therefore, the main objectives of this paper are: (i) to investigate the differences between occupational stress and symptoms of burnout of employees from different age groups in the workplace and (ii) to analyze the impact of occupational stress, symptoms of burnout and age on work satisfaction of employees.

2 Literature Review

2.1 Occupational stress

Occupational stress is defined as "the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources or needs of the worker" (De Silva et al., 2017). Consequences of occupational stress are observed at two levels, at the company level and at the level of the worker, and there is a correlation between the two; economic losses within a company correlates (affects) employees' health state (Mosadeghrad, 2014). Workers not capable of coping with stressful situations might face a variety of negative effects in their physical, psychological or behavioral states. In the physical area, people may feel different pains such as headaches, neck pain and shoulder pain or have an elevated heart rate. In the psychological area negative effects may include insomnia, anxiety, depression and other psychological issues. Behavioral factors include fatigue, less efficacy at work and many others; these factors will influence in a negative way the entire production, the branch's image and the quality of the final consumer product (Hespanhol, 2004). Research on the harmful effects of occupational stress on physical well-being and a worker's health show that among principal consequences are higher risks for cardiovascular diseases (Kang et al., 2005), musculoskeletal disorders, respiratory diseases, psychological disorders, sleep disturbances, lack of concentration, depression, intolerance and many others, as well as anxiety (O'Connor et al., 2000).

According to Hertel et al. (2013) older employees experience lower stress levels than younger employees. On the other hand, Götz et al. (2018) emphasized that the impact of stressful work differs depending on the period, or life stage, at which it occurs. Older persons may be more vulnerable to occupational stress because the ageing pro-

ness is accompanied by changes in coping capabilities and resources as well as changes of the physiological system. Older employees, therefore, may be more likely to become sick in the case of stressful work and may take longer to recover from illness. In that case, the association between stress and sickness absences would be more pronounced for older employees. The authors also argue that younger employees may face greater pressure to develop strong ties to the labour market, and therefore, they are more likely to continue working, compared to their older counterparts, even if conditions at work are poor. There are, however, also reasons why the association between occupational stress and sickness absence could be less pronounced for older employees than for younger employees. For example, older employees may face more difficulties in finding a new job in the case of job loss; therefore, they are probably more likely to tolerate adverse conditions than younger employees.

2.2 Burnout and symptoms of burnout

Occupational stress related to a severe and constant level of stress is known as burnout syndrome, which is characterized by a decrease in personal fulfillment, isolation from social relationships and emotional exhaustion (Yavas et al., 2013). Maslach et al. (2001) defined burnout as a “prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, cynicism, and inefficacy”. Also, the authors summarized research that indicates burnout has been associated with various forms of job withdrawal (absenteeism), intention to leave the job and actual turnover.

In our research, the burnout of employees was identified and measured by three separate groups of symptoms. Physical symptoms of burnout include exhaustion, fatigue, headaches, sleep disorders, loss of energy, nonspecific pain, reduced attention span, feelings of meaninglessness, apathy, raised blood pressure, chest pains and gastrointestinal disorders. Emotional symptoms of burnout in the workplace may include depressed mood states, anxiety, irritability, loss of confidence, tension or sadness. Behavioral symptoms of burnout in the workplace may include disturbed sleep patterns, reduced reaction times, reduced work capacity and less work motivation (Mosadeghrad, 2014).

2.3 Satisfaction in the workplace

Job satisfaction generally implies a positive evaluation of work and a positive effect deriving from it; that is, a “positive emotional state resulting from the appraisal of one’s job or job experiences” (see, e.g., Tansel and Gazioğlu, 2014). Existing studies have established a positive relationship between job satisfaction and performance (Judge

et al., 2001). Harrison et al. (2006) argued that job satisfaction is also understood in terms of its relationship with other key factors of employees, like general well-being in the workplace, stress and workload, control at work, home-work balance and working conditions.

The relationship between job satisfaction and age shows that levels of job satisfaction tended to change, with initially high levels giving way to declines in mid-career, and then starting to improve again later in the worker’s career. This was explained by an individual’s adjustment to his/her work and life situation (Halkos and Bousinakis, 2010). In terms of occupational stress, previous research has shown that middle-aged workers (30 to 50-year-olds) had slightly higher proportions in the reported high stress category than those at the extremes of the age range (Smith et al., 2000). This could be explained by multiple family and work-related tasks that potentially impact the stress levels during one’s middle-years (see, e.g., Darmody and Smyth, 2016). Also, a study conducted by Yang et al. (2016) reported that occupational stress decreases employees’ occupational satisfaction and self-motivation.

Occupational stress and burnout impact the health and psychological well-being of workers with the attendant effects on their attitude towards work (Babajide and Akintayo, 2011). When the working environment is perceived to be conducive, there is less stress, employees are satisfied and job performance is greatly enhanced (Parkes, 2002). Burnout leads to lower productivity and effectiveness at work. It is associated with decreased job satisfaction and a reduced commitment to the job or the organization (Maslach et al., 2001).

2.4 Age diversity in the workplace

Population ageing is impacting employers, and for many organisations there are strong business reasons to develop strategies for managing diversified age profiles in their workplaces (Hoyle, 2017). Job characteristics are not experienced in the same way by all age diverse workers. Given the demographic shifts in today’s workplace, a worker’s age appears to be an important individual difference (Zaniboni et al., 2014).

On the one hand, high diversity in teams or other organizational units might increase creativity, innovation and problem solving due to the multiple perspectives and backgrounds of the different workers. On the other hand, high diversity often comes with higher needs for communication, coordination and conflict management due to differences in expectations, working styles and general values. Therefore, to benefit from diversity, the accurate management of mutual perceptions and interactions is crucial (Hertel et al., 2013).

Hertel et al. (2013) asserted that ageing refers to changes that occur in biological, psychological and social functioning over time, thereby affecting individuals

on personal, organizational and societal levels. This also means that employees' age diversity has different effects on work-related attitudes. According to Schneid et al. (2018), understanding age diverse employees is essential for improving productivity and for ensuring the success of the company, which also leads to the well-being of all age diverse employees. Thus, on the basis of the literature review, we can summarize that age diverse employees are faced with different symptoms of burnout and occupational stress when carrying out their work.

2.5 Research hypotheses

Based on the theoretical ground, we formulated the following research hypotheses.

Hypotheses H1 is formed following Adams et al. (2013) and Hertel et al. (2013), who state that older employees report experiencing lower levels of stressors than younger employees. Adams et al. (2013) summarized two possible explanations for these findings. First, as employees age they accumulate more work experiences and acquire more occupational expertise and wisdom, which may act as a resource when dealing with role-related stressors. Second, older employees are more likely to be in high-status positions with certain characteristics, including job control, flexible work schedules and access to support from the job environment. These job characteristics may reduce employee exposure to stressors such as role ambiguity and role conflict.

H1: There are statistically significant differences in occupational stress in the workplace between older and younger employees.

Hypotheses H2.1, H2.2 and H2.3 were formed based on findings that showed age was differentially related to burnout in separate age groups (Ahola et al., 2008). The same approach when studying symptoms of burnout was used by Mosadeghrad (2014). The highest burnout prevalence was found among the younger employees. Haley et al. (2013) stated that possible reasons for younger employees' higher burnout levels seem to include a lack of skills to deal with everyday problems arising in the workplace, a "reality shock" when just entering the workplace, a lack of coping skills as a result of less experience in a working environment and transitional shock. On the other hand, Wang and Shultz (2010) emphasized that burnout increases with ageing. Among the demographic variables, age turns out to be the most related to burnout. It has been found that poor health is one of the major determinants of early retirement, and the poorer the health of older workers, the stronger their intentions appear to be to withdraw from the labour force early.

- H2.1: There are statistically significant differences in behavioral symptoms of burnout in the workplace between older and younger employees.
- H2.2: There are statistically significant differences in

emotional symptoms of burnout in the workplace between older and younger employees.

- H2.3: There are statistically significant differences in physical symptoms of burnout in the workplace between older and younger employees.

Hypotheses H3.1, H3.2, H3.3, H3.4 and H3.5 were formed based on the findings of Fairbrother and Warn (2003), who found strong correlations between the dimensions of workplace, stress and job satisfaction. High levels of work stress are associated with low levels of job satisfaction. Job stressors are predictive for job dissatisfaction and a greater propensity to leave the organization. According to Faragher et al. (2005) occupational stress has a negative effect on job satisfaction and deteriorates the physical and mental health of age diverse employees. Lu and Gursoy (2013) summarized that all symptoms of burnout have a significant negative impact on the age diverse employees' work satisfaction.

- H3.1: Occupational stress has a significant impact on the employees' perceived work satisfaction.
- H3.2: Symptoms of behavioral burnout have a significant impact on the employees' perceived work satisfaction.
- H3.3: Symptoms of emotional burnout have a significant impact on the employees' perceived work satisfaction.
- H3.4: Symptoms of physical burnout have a significant impact on the employees' perceived work satisfaction.
- H3.5: Age has a significant impact on the employees' perceived work satisfaction.

3 Methodology

3.1 Data and sample

A survey among Slovenian medium-sized (the average number of employees in business year does not exceed 250) and large companies (the average number of employees in business year exceeds 250) was conducted, and questionnaires were sent to 800 randomly selected medium-sized and large Slovenian companies. The questionnaire was addressed to the owner/manager of the company and sent via e-mail or ordinary post (depending on the availability of contact data). We asked the owner/manager of the company to distribute a questionnaire among age diverse employees. With the purpose of increasing the response rate, we sent the reminders to complete the questionnaire in three waves: twice by e-mails and once by personally contacting them by phone. The main survey involved 307 companies (the response rate was 38.4%). We limited the responses to up to four employees in each company, and, thus, the survey included 691 respondents.

The employees in the sample were divided into two age groups: younger employees under 50 years of age and older employees between 50 to 65 years of age. In most cases in the literature, the lower age limit defining older employees is 45 years (Brooke, 2003) or 50 years (Ilmarinen, 2001); the term “older employees” also refers to employees between 40 and 50 years of age (Ghosheh et al., 2006). For the purposes of the present research the age of 50 years is used. Table 1 shows the profile of respondents – employees with respect to control variables.

The survey responses included 47% younger employees aged 18 to 49 years and 52.8% older employees aged 50 to 65. Regarding the achieved education level of employees who participated in the research, 62.7% of the respondents finished high professional or university education, 21.7% of the respondents have a master’s degree or doctorate, 14.3% of the respondents finished college and the smallest percentage represents respondents who finished vocational or high school (1.3%). The biggest share of responses represented large companies (51.9%). Medium-sized companies comprised 48.1%.

3.2 Research instrument

Statements included in the questionnaire, describing different dimensions of occupational stress and symptoms of burnout (behavioral symptoms, emotional symptoms and physical symptoms), were designed and tested in empirical research by Mosadeghrad (2014). Statements describing different dimensions of employee satisfaction were also designed and tested by Groot and Brink (1999). The respondents indicated their agreement to the listed statements, using a 5-point Likert-type scale from 1–completely disagree to 5–completely agree.

3.3 Methods used

Factor analysis was used to form multidimensional constructs for the perceived occupational stress, symptoms of burnout and perceived employees’ satisfaction. We wanted to establish whether the use of factor analysis is reasonable on the basis of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy ($KMO \geq 0.5$) (Kaiser, 1974) and Bartlett’s test of sphericity. For the communalities the threshold of 0.40 was used (Costello and Osborne, 2005). The initial factors’ rotation was conducted with the purpose to improve factors’ interpretability and achieve a more even distribution of variance across factors. The rectangular rotation Varimax maximises the variance of weight squares in every factor, and that simplifies the structure by columns (Manly, 2005).

To test hypotheses H1, H2.1, H2.2 and H2.3 about the differences between younger and older employees, the non-parametric Mann-Whitney U test was used. To test

hypothesis H3.1 – H3.5, about the impact of occupational stress, behavioral, emotional and physical symptoms of burnout and age on employees’ work satisfaction, the multiple regression analysis was used.

4 Results

4.1 Results of factor analysis

First the factor analysis was applied to form the constructs of occupational stress, symptoms of the three groups of symptoms of burnout and employees’ satisfaction. Results of the factor analysis are presented in Tables 1, 2 and 3.

Table 1 shows the results of factor analysis for the construct occupational stress. Results of the KMO measure and the Bartlett’s test of sphericity show that the use of factor analysis is justified. The values of all communalities in Table 1 for the construct occupational stress of age diverse employees are higher than 0.60, therefore we have not eliminated any measured variables. Table 1 also shows that total variance explained is 72.7%. All factor loadings are higher than 0.70. In our case, the most important role in occupational stress of age diverse employees is achieved by the statement: “Due to stress in the workplace, I feel a lack of energy, tiredness”. The value of the Cronbach’s alpha for the factor occupational stress of age diverse employees is 0.940, therefore the reliability of the measurement in occupational stress of age diverse employees is exemplary.

Table 2 shows the results of factor analysis for the constructs of burnout, where the three dimensions of burnout are analyzed: behavioral, emotional and physical symptoms.

The value of Kaiser-Meyer-Olkin measures of sampling adequacy and the results of Bartlett’s test of sphericity ($p < 0.01$) justified the use of factor analysis. The values of all communalities for the construct symptoms of burnout are higher than 0.60, therefore we have not eliminated any variable. The total variance explained for behavioral symptoms of burnout is 84.9%, and for emotional symptoms of burnout it is 82.8%. In the case of physical symptoms of burnout, two factors were obtained which together explain 85.3% of variability (first factor 74.8%, second factor 10.4%). Thus, we obtained two factors: physical symptoms of burnout-1 and physical symptoms of burnout-2.

In our case, the most important role in behavioral symptoms of burnout of age diverse employees is achieved by the statement: “I lack the will to socialize with co-workers” and the most important role in emotional symptoms of burnout by the statement: “I feel anger”. The most important role in physical symptoms of burnout-1 (factor 1) is “I have vertigo”. For physical symptoms of burnout-2 the most important factor is “My sleep cycle is messy”.

Table 1: Results of factor analysis for the construct occupational stress

Construct occupational stress	Communalities	Factor loadings
I am facing with the stress in performing work tasks.	0.734	0.857
Due to an excessive amount of work, my lifestyle is rather uneven (irregular meals, an unsettled sleeping cycle, lack of sports activity).	0.685	0.828
Due to stress in the workplace, I feel a lack of energy, tiredness.	0.813	0.901
Due to stress in the workplace, I have problems with concentration.	0.719	0.848
I feel the lack of my capacity in performing my work tasks.	0.782	0.884
At workplace, the stance of my body is forced for a long time (siting, standing).	0.601	0.775
At the workplace there is tension, conflict between employees.	0.754	0.868
Kaiser–Meyer–Olkin measure: 0.898		
Bartlett’s test of sphericity	Approximate Chi-Square	4191.119
	df	21
	<i>p</i>	0.000
Cumulative percentage of explained variance: 72.675 %		
Cronbach’s Alpha: 0.940		

The values of the Cronbach’s alphas for all three constructs of burnout are high (over 0.9), indicating that the reliabilities of the measurement scales are again exemplary.

Table 3 shows the results of factor analysis for the construct employees’ satisfaction. Again, the value of the Kaiser-Meyer-Olkin measure of sampling adequacy and the results of the Bartlett’s test of sphericity ($p < 0.01$) justified the use of factor analysis. The values of all communalities were higher than 0.70. The total variance explained for employees’ satisfaction is 82.1%. The most important role in satisfaction of employees is achieved by the statement: “At my workplace I am satisfied with the leadership in the company”. The value of the Cronbach’s alpha for the factor employees’ satisfaction is 0.964, therefore the reliability of the measurement in the satisfaction of employees is also exemplary.

4.2 Differences between younger and older employees regarding the occupational stress and symptoms of burnout

In the second step, the obtained factors were used to test the hypotheses H1 and H2, where older and younger employees were defined according to age group. Table 4 presents

the results of the non-parametric Mann-Whitney U test of obtained factors for the construct occupational stress and the construct symptoms of burnout in the workplace.

By using the Mann-Whitney U test, we tested whether the observed differences between employees in the two age groups are statistically significant. Based on the results (Table 4), we found that there are statistically significant differences between older and younger employees in the levels of occupational stress as well as regarding the symptoms of burnout (behavioral symptoms of burnout, emotional symptoms of burnout and physical symptoms of burnout) in the workplace. Based on the results we confirmed the hypothesis H1: There are statistically significant differences in occupational stress in the workplace between older and younger employees and hypothesis H2.1: There are statistically significant differences in behavioral symptoms of burnout in the workplace between older and younger employees. We also confirmed hypothesis H2.2: There are statistically significant differences in emotional symptoms of burnout in the workplace between older and younger employees and hypothesis H2.3: There are statistically significant differences in physical symptoms of burnout in the workplace between older and younger employees. We can also conclude that the perceived levels of occupational stress as well as perceived symptoms of burnout (behavioral, emotional and physical) are on average lower in the group of older employees as compared

Table 2: Results of factor analysis for the construct symptoms of burnout

Behavioral symptoms of burnout	Communalities	Factor loadings	
I avoid activities.	0.841	0.917	
I have nightmares.	0.863	0.929	
I have insomnia.	0.631	0.794	
I have difficulties with concentration and memory.	0.856	0.925	
I wish for solitude.	0.892	0.945	
My working ability has declined.	0.896	0.947	
I lack the will to work.	0.904	0.951	
I lack the will to socialize with co-workers.	0.910	0.954	
Kaiser–Meyer–Olkin measure: 0.937			
Bartlett's test of sphericity	Approximate Chi-Square	8379.298	
	df	28	
	<i>p</i>	0.000	
Cumulative percentage of explained variance: 84.905			
Cronbach's Alpha: 0.968			
Emotional symptoms of burnout	Communalities	Factor loadings	
I have depressive feelings	0.864	0.929	
I am tense.	0.594	0.771	
I feel panic	0.877	0.937	
I am afraid of losing the job or not finishing the work on schedule.	0.644	0.802	
I am sad.	0.834	0.913	
I have a feeling of helplessness	0.872	0.934	
To me, everything seems meaningless	0.890	0.943	
I am emotionally exhausted	0.864	0.930	
I am exceedingly sensitive	0.879	0.938	
I am quarrelsome.	0.891	0.944	
I feel anger.	0.901	0.949	
Kaiser–Meyer–Olkin measure: 0.949			
Bartlett's test of sphericity	Approximate Chi-Square	12299.281	
	df	55	
	<i>p</i>	0.000	
Cumulative percentage of explained variance: 82.825			
Cronbach's Alpha: 0.977			
Physical symptoms of burnout	Communalities	Factor loadings	
		1	2
I have headaches, migraines.	0.814	0.283	0.857
My sleep cycle is messy.	0.859	0.253	0.892
I have vertigo.	0.948	0.917	0.327
I am sweating.	0.938	0.914	0.320
I have sweaty and cold hands.	0.937	0.913	0.323
My blood pressure varies.	0.938	0.901	0.354
I often have the flu or virosis.	0.770	0.690	0.542

Table 2: Results of factor analysis for the construct symptoms of burnout (continued)

I am often tired, exhausted.	0.795	0.483	0.749
I have stomach aches.	0.752	0.612	0.617
I have increased heart rate.	0.835	0.739	0.538
I have lower back pain, shoulder pain.	0.792	0.391	0.799
Kaiser–Meyer–Olkin measure: 0.934			

Table 3: Results of factor analysis for the construct employees' satisfaction

At my workplace I am satisfied:	Communalities	Factor loadings
With working hours and distribution of work obligations.	0.880	0.938
With flexible working hours.	0.863	0.929
With the balance between work and private life	0.659	0.812
With enabled self-regulation of speed of work performed.	0.855	0.925
With intergenerational cooperation.	0.880	0.938
With the working conditions, such as better light, air conditioning, and bigger inscriptions.	0.723	0.851
With the interpersonal relationships in the company.	0.828	0.910
With the leadership in the company	0.882	0.939
Kaiser–Meyer–Olkin measure: 0.941		
Bartlett's test of sphericity	Approximate Chi-Square	7211.576
	df	28
	<i>p</i>	0.000
Cumulative percentage of explained variance: 82.130%		
Cronbach's Alpha: 0.964		

Table 4: Mann-Whitney U test

Factors (constructs)	Mean		Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	
	Younger employees	Older employees				
Occupational stress	-0.0069163	-0.1256373	46526.000	-4.775	0.000	
Behavioral symptoms of burnout	0.0337975	-0.0630286	49436.000	-3.599	0.000	
Emotional symptoms of burnout	0.0490263	-0.0468914	48887.000	-3.638	0.000	
Physical symptoms of burnout	Factor 1	0.0380275	-0.1218029	113750.500	-4.357	0.000
	Factor 2	-0.0027594	-0.2210989	110419.500	-5.644	0.000

to the group of younger employees (average factors' values are lower for older employees), which is in line with several previous findings (Mosadeghrad, 2014; Henkens and Leenders, 2010; Maslach et al., 2001; Schaufeli and Enzmann, 1998; Campanelli, 1990).

To further illustrate these results, Table 5 presents the non-parametric Mann-Whitney U test of individual com-

ponents for the construct occupational stress and Table 6 presents the non-parametric Mann-Whitney U test of the age diverse employees of individual components for constructs of behavioral, emotional and physical symptoms of burnout.

Based on the results (Table 5), we found there are statistically significant differences between older and young-

Table 5: Mann-Whitney U Test for individual components of the constructs of occupational stress of younger and older employees

Statement	Mean		Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
	Younger employees	Older employees			
I am facing with the stress in performing work tasks.	3.68	3.66	56510.500	-1.167	0.243
Due to an excessive amount of work, my lifestyle is rather uneven (irregular meals, an unsettled sleeping cycle, lack of sports activity).	3.69	3.59	43504.000	-6.277	0.000
Due to stress in the workplace, I feel a lack of energy, tiredness.	3.25	3.24	56846.500	-0.990	0.322
Due to stress in the workplace, I have problems with concentration.	2.52	2.59	39169.500	-8.534	0.000
I feel the lack of my capacity in performing my work tasks	2.76	2.81	43564.500	-6.598	0.000
At workplace, the stance of my body is forced for a long time (siting, standing).	3.68	3.63	50059.500	-3.772	0.058
At the workplace there is tension, conflict between employees.	3.05	3.03	48800.500	-4.191	0.064

er employees regarding the statement “Due to an excessive amount of work, my lifestyle is rather uneven (irregular meals, an unsettled sleeping cycle, lack of sports activity)”, where older employees on average perceive a lower level of stress, as compared to younger employees. On the other hand, significant differences are found also regarding the statements “Due to stress in the workplace, I have problems with concentration” and “I feel the lack of my capacity in performing my work tasks” ($p < 0.05$), where older employees on average perceive slightly higher levels of stress, as compared to younger employees. Other differences are not statistically significant ($p > 0.05$).

Table 6 presents the non-parametric Mann-Whitney U test results of the age diverse employees for individual components for constructs of behavioral, emotional and physical symptoms of burnout.

For all statements regarding the physical symptoms of burnout, where the significant differences are found, the average levels of agreement with the individual statements in the group of older employees are again lower than compared to those of younger employees, which is in line with the research results presented in the literature (Maslach et al., 2001). Statistically significant differences between older and younger employees regarding the physical symptoms of burnout are identified at the following items: “I have headaches, migraines”, “My sleep cycle is messy”, “I have vertigo”, “I am sweating”, “I have sweaty and cold hands”, “I often have the flu or virus” and “I have stomach aches” ($p < 0.05$).

For each and every individual statement of the behav-

ioral symptoms of burnout the average levels of agreement, indicating the perceived level of burnout, are lower for older employees. Statistically significant differences are identified regarding the following items: “I avoid activities”, “I have difficulties with concentration and memory”, “I wish for solitude” and “My working ability has declined” ($p < 0.05$).

Also there are statistically significant differences between older and younger employees in statements that describe emotional symptoms of burnout: “I feel panic”, “I am sad”, “To me, everything seems meaningless”, “I am exceedingly sensitive”, “I am quarrelsome” and “I feel anger” ($p < 0.05$), with on average lower levels observed in a group of older employees. Similarly, at all other statements the average levels of agreement for older employees are lower than compared to younger employees, but differences are not statistically significant ($p > 0.05$).

4.3 The impact of occupational stress, symptoms of burnout and age on the employees' perceived work satisfaction

In the continuation we present the results of testing hypothesis H3, which was elaborated into the form of five sub-hypotheses:

- H3.1: Occupational stress has a significant impact on the employees' perceived work satisfaction.

Table 6: Mann-Whitney U Test for individual components of the constructs of the three groups symptoms of burnout of younger and older employees

	Mean		Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
	Younger employees	Older employees			
Physical symptoms of burnout					
I have headaches, migraines.	3.50	3.38	50311.500	-3.559	0.000
My sleep cycle is messy.	3.69	3.60	50866.500	-3.353	0.001
I have vertigo.	2.61	2.52	54122.500	-2.124	0.034
I am sweating.	2.64	2.52	53833.500	-2.233	0.026
I have sweaty and cold hands.	2.57	2.48	52387.500	-2.853	0.004
My blood pressure varies.	2.72	2.76	58860.500	-0.181	0.856
I often have the flu or virosis.	2.98	2.91	53367.500	-2.312	0.021
I am often tired, exhausted.	3.44	3.31	54775.500	-1.746	0.081
I have stomach aches.	3.09	2.88	47977.500	-4.286	0.000
I have increased heart rate.	2.90	2.85	55051.000	-1.575	0.115
I have lower back pain, shoulder pain.	3.56	3.53	58401.500	-0.362	0.718
Behavioral symptoms of burnout					
I avoid activities.	2.70	2.60	51006.000	-3.289	0.001
I have nightmares.	2.78	2.72	54897.500	-1.735	0.083
I have insomnia.	3.43	3.38	54459.000	-1.933	0.053
I have difficulties with concentration and memory.	2.51	2.43	53556.500	-2.321	0.020
I wish for solitude.	2.54	2.44	51623.000	-3.092	0.002
My working ability has declined.	2.88	2.76	53870.000	-2.118	0.034
I lack the will to work.	2.72	2.65	56190.000	-1.176	0.240
I lack the will to socialize with co-workers.	2.65	2.58	55095.500	-1.557	0.120
Emotional symptoms of burnout					
I have depressive feelings.	2.42	2.36	58017.500	-0.522	0.602
I am tense.	3.46	3.38	55109.500	-1.611	0.107
I feel panic.	2.50	2.39	53193.500	-2.531	0.011
I am afraid of losing the job or not finishing the work on schedule.	2.83	2.92	57005.000	-0.922	0.357
I am sad.	2.61	2.58	52485.000	-2.702	0.007
I have a feeling of helplessness.	2.43	2.34	55874.500	-1.415	0.157
To me, everything seems meaningless.	2.35	2.29	53790.000	-2.304	0.021
I am emotionally exhausted.	2.72	2.67	58959.500	-0.068	0.946
I am exceedingly sensitive.	2.64	2.55	53106.000	-2.410	0.016
I am quarrelsome.	2.58	2.47	51569.500	-3.128	0.002
I feel anger.	2.52	2.42	49988.500	-3.782	0.000

Table 7: Multiple regression results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.178	0.036		4.973	0.000		
Stress	-0.459	0.061	-0.459	-7.540	0.000	0.433	2.310
Behavioral symptoms of burnout	-0.284	0.084	-0.285	-3.378	0.001	0.954	1.048
Emotional symptoms of burnout	-0.147	0.079	-0.147	-1.864	0.003	0.963	1.038
Physical symptoms of burnout 1	0.042	0.040	0.043	1.057	0.291	0.403	2.480
Physical symptoms of burnout 2	0.060	0.043	0.060	1.398	0.162	0.373	2.684
Age	-0.328	0.051	-0.164	-6.490	0.000	0.978	1.023

- H3.2: Symptoms of behavioral burnout have a significant impact on the employees' perceived work satisfaction.
- H3.3: Symptoms of emotional burnout have a significant impact on the employees' perceived work satisfaction.
- H3.4: Symptoms of physical burnout have a significant impact on the employees' perceived work satisfaction.
- H3.5: Age has a significant impact on the employees' perceived work satisfaction.

The multiple regression model was formed, where the dependent variable was the multidimensional construct (factor) for employees' satisfaction, while the explanatory variables included in the model were constructs (factors) for occupational stress and burnout (physical, behavioral and emotional). The age differences were studied by the inclusion of the dummy variable age (0 – older and 1 – younger employees) into the regression model. Results are presented in Table 7.

Multiple regression results show that the regression model is significant ($F = 181.765, p < 0.01$) and that over 60% of variance of a dependent variable is explained by the regression model (Adjusted R square = 0.618). Values of tolerance and the variance inflation factor (VIF) indicate no significant multicollinearity problems among variables. The cutoff for $VIF < 5$ is used (Sheather, 2009).

Results also reveal that the impact of occupational stress of employees on their work satisfaction is, as expected, negative. The higher the perceived stress, the lower on average the employees' work satisfaction; the impact is significant ($p < 0.05$). Therefore, hypothesis H3.1 is confirmed.

Behavioral and emotional symptoms of burnout also proved to have a significant and negative impact on employees' satisfaction ($p < 0.05$); employees perceiving higher levels of behavioral and emotional symptoms of burnout, are on average, less satisfied with their work. Therefore, hypotheses H3.2 and H3.3 are confirmed. On the other hand, the physical symptoms of burnout were not identified as an important factor of employees' work satisfaction (for both factors $p < 0.05$), thus hypothesis H3.4 is not confirmed. According to Veromaa et al. (2017) work ability is the degree to which an employee, given his/her health, is physically and mentally able to cope with the demands at work. On the other hand, work satisfaction and work engagement are more dependent on mental or emotional aspects.

Age is a significant factor shaping the employees' perceived work satisfaction – research results show that the regression coefficient for age variable is significant and negative ($p < 0.05$), confirming that the level of work satisfaction for younger employees is on average lower than compared to their older counterparts. As already mentioned, the perceived occupational stress and perceived burnout are significantly higher in the group of younger employees, thus it is not surprising that these characteristics are also reflected in their lower perceived satisfaction with work. Therefore, hypothesis H3.5 is confirmed.

5 Discussion and conclusion

Based on the results, we found there are statistically significant differences between older and younger employees relating to occupational stress as well as regarding the behavioral, emotional and physical symptoms of burnout

in the workplace (Table 4). Results also revealed that the perceived levels of occupational stress as well as perceived symptoms of burnout (behavioral, emotional and physical) are on average lower in the group of older employees than compared to the group of younger employees, which is in line with several previous findings (Mosadeghrad, 2014; Henkens and Leenders, 2010; Maslach et al., 2001; Schaufeli and Enzmann, 1998; Campanelli, 1990). This at the same time provides the answers to the first two research questions: we established the statistically significant differences in occupational stress and in symptoms of burnout in the workplace of older employees as compared to younger employees in Slovenian companies.

Research results also show that the impact of employees' occupational stress on their work satisfaction is significant and negative (the higher the perceived stress, the lower on average the employees' work satisfaction). Behavioral and emotional symptoms of burnout also proved to have a significant and negative impact on employees' satisfaction, while physical symptoms of burnout do not. Employees perceiving higher levels of behavioral and emotional symptoms of burnout, are on average, less satisfied with their work. Age is a significant factor shaping the employees' perceived work satisfaction. Research results show that the regression coefficient for age variable is significant and negative, confirming that the level of work satisfaction for younger employees is on average lower than compared to their older counterparts (Table 7). The perceived occupational stress and perceived symptoms of burnout are significantly higher in the group of younger employees (Table 5 and Table 6), which is in line with several previous findings (Adams et al., 2013; Ahola et al., 2008; Haley et al., 2013). This also brings the answer to the third research question: we established that occupational stress, behavioral and emotional symptoms of burnout and age proved to have a significant and negative impact on employees' satisfaction, while the impact of physical symptoms of burnout was not confirmed.

The demographics of the global workforce are changing, specifically with a more age diverse workforce, bringing new research questions. It becomes more important to find ways for people to stay satisfied in their work at different life stages. The quality of working life has a big impact on all employees because we spend so much of our time at work. Therefore, investments in active ageing need to be secured during the working years.

Our study has several implications for employers and policymakers. Recommendations for employers that reduce occupational stress and symptoms of burnout for age diverse employees include redesign of the workplace (re-designing individual work tasks according to the needs and capabilities of employees), job simplification, job rotation, redistribution in the company (coordinating job requirements with the capabilities and skills of employees), job sharing and providing more frequent short breaks at work. For economic policymakers the main implication is

the need to formulate legislative measures that allow for more flexible forms of employment of a younger generation. Working conditions must be adapted to all employees; workplaces should be developed according to the age diversity of employees, with the workload adapted to all age groups. It is important to know that job characteristics are not experienced in the same way by all employees. From this perspective, our research shows the importance of well-being, health and a friendly work environment for age diverse employees in Slovenian companies.

Our study is limited to the focus of age differences among employees in Slovenia in medium-sized and large Slovenian companies. Further research may investigate in more detail the importance of control variables that are not included in the model, for example, gender, education or industry, as well as gender differences in the respective age groups. The multidimensional constructs included in our research model are the perceived occupational stress, symptoms of behavioral, emotional and physical burnout and work satisfaction that are limited to the work place situations. Further research may also include dimensions of individuals' lives; for example, we can assume that a great deal of stress of younger generations can be attributed to the greater dynamics and difficulties in balancing private-family care and employment. Therefore, for economic policy makers it could also be important to establish the importance of affordable, and, above all, safe, child-care. Allowing different precarious forms of employment, which the younger generations in Slovenia witness to a great extent, does not help to regulate the situation in this field, nor to create a balance between the family and the employment environment. Temporary contracts for employment are extremely common among young people in Slovenia; data show that in Slovenia the incidence of temporary contracts among young people is much higher (over 70%) as compared to OECD averages for the same age group (approximately 25%) (OECD, 2015). The negative effects of precariat are numerous and contribute to occupational stress and burnout: uncertainty, low pay, limited social security rights, mostly short-term work, flexibility on the part of an employee in terms of adapting to the needs of employers, etc. This is also an important area for further research – if further research confirms that occupational stress and burnout are deepened by the precarious forms of employment, then economic and social policy measures should pay more attention to this area immediately. From the methodological viewpoint, further research may include the development of a conceptual model using the structural equation modeling (SEM) approach. A multivariate analysis may be recommended in the structural model to examine differences by age in the paths.

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Poklicni stres, simptomi izgorelosti in zadovoljstvo na delovnem mestu starostno raznolikih zaposlenih

Ozadnje in namen: Starostno raznoliki zaposleni se soočajo z različnim poklicnim stresom in različnimi simptomi izgorelosti pri opravljanju svojega dela. Zato ne smemo zanemariti vloge starosti zaposlenih pri upravljanju delovnih mest. Glavni namen prispevka je preučiti starostne razlike v poklicnem stresu in simptomih izgorelosti zaposlenih ter analizirati vpliv poklicnega stresa, simptomov izgorelosti in starosti na zadovoljstvo zaposlenih.

Metodologija: Prispevek temelji na raziskavi razlik med dvema starostnima skupinama, in sicer skupino mlajših zaposlenih, ki so bili razvrščeni v skupino pod 50 let in starejših zaposlenih med 50 in 65 letom starosti. Faktorska analiza je bila uporabljena za oblikovanje konstruktov poklicnega stresa, simptomov izgorelosti in zadovoljstva na delovnem mestu. Neparometrični Mann-Whitney U test je bil uporabljen za testiranje razlik v vrednosti konstruktov poklicnega stresa in simptomov izgorelosti na delovnem mestu med dvema neodvisnima skupinama. Multipla regresijska analiza je bila uporabljena za preučitev vpliva poklicnega stresa, simptomov izgorelosti in starosti na zadovoljstvo zaposlenih na delovnem mestu.

Rezultati: Rezultati kažejo, da obstajajo statistično značilne razlike v poklicnem stresu in simptomih izgorelosti na delovnem mestu med starejšimi in mlajšimi zaposlenimi. V povprečju mlajši zaposleni zaznavajo višjo stopnjo poklicnega stresa in izgorelosti v primerjavi s starejšimi zaposlenimi. Rezultati raziskave tudi kažejo, da poklicni stres, vedenjski simptomi izgorelosti in čustveni simptomi izgorelosti ter starost, statistično značilno vplivajo na zadovoljstvo zaposlenih na delovnem mestu.

Zaključek: Upravljanje starostne raznolikosti zahteva strateški pristop k upravljanju ljudi pri delu. S tega vidika raziskava dopolnjuje obstoječa raziskovalna spoznanja s poudarjanjem odnosov med starostjo in poklicnim stresom ter simptomi izgorelosti, ki do sedaj niso bili dovolj raziskani, saj je bila vloga starosti pri upravljanju delovnih mest v veliki meri prezrta.

Ključne besede: poklicni stres; izgorelost; simptomi izgorelosti; starostno raznoliki zaposleni; zadovoljstvo na delovnem mestu

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