

## MULTIFACETED CHARACTER OF THE ISSUES OF AGE MANAGEMENT

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**Abstract:** Age management is a broad concept, presented in various contexts and related to many issues such as: population ageing, medicine, active ageing, diversity management or anti-discrimination. As a result, the significance of demographic processes is increasingly recognised by numerous researchers in various scientific disciplines. In the context of management studies, we can see a growing popularity of the concept of age management as one of the instruments to mitigate the effects of ageing and shrinking of potential workforce. The aim of this publication was to present research and development activity in the area of age management based on the use of bibliometrics to conduct quantitative analyses of scientific publications on the issues addressed in the research. The authors concentrated on publications indexed in the Scopus database. The studies revealed multifaceted character of this issue.

**Key words:** age management, ageing, organization, bibliometric analysis

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### Introduction

Age management is a concept that appears in many research areas. It is identified in environmental protection and technical fields, but mainly refers to human resources. Demographical changes taking place across Europe indicate that the number of people aged over 50 is growing and the birth rate is decreasing. As stressed by Vernon (2010), ageing is one of the most important problems of the modern world. This process impacts social security, labour market and employment, distribution of income and savings, pension systems, education as well as health care systems and relationships between generations (Cepinskis and Kanisaukaite, 2009; Sipa et al., 2016).

These processes lead to significant changes in workforce, and thus pose a huge challenge to economies and enterprises in terms of fulfilment of the HR function. In order to promote age diversity, businesses must set up a human resource policy that prevents discrimination, to ensure that non-discriminatory practices are commonplace throughout professional life – as much in the recruitment phase as in the career management phase (Gorzeń-Mitka, 2017; Kuběnka and Slaviček, 2016; Skowron-Grabowska and Mesjasz-Lech, 2016). To guarantee the employability of an older workforce, businesses have to commit to a management policy for all

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ages, which nurtures their employees' know-how, develops their skills regardless of their age, promotes cooperation between generations and looks to improve work conditions (see more: Addeco, 2011). It is necessary to increase pressure on the development of an *age-positive* policy, creation of intergenerational learning systems and systems devoted to the issues of safety and health protection, and holistic approach to human resources planning (EQUAL, 2007). However, age management is by no means a new concept. In the context of human resources management (HRM), the problem of population ageing was recognised many years ago in numerous countries, especially Scandinavian ones, and the effects of actions undertaken in the area of age management are already visible. In view of the above, the main aim of this publication was to present research and development activity in the field of age management based on the use of bibliometric analysis. The authors concentrated on publications indexed in the Scopus database from the period 2000-2016.

### **Age Management - Theoretical Background**

Age management is defined in various ways, being hardly visible as a concept in the theory of management. Usually, it refers directly to demographic processes, management of a diverse team of employees and the phenomenon of discrimination. It can refer to interventions at the level of the individual older person, the labour market or the organisation. According to Neagele and Walker (1999) age management can encompass attitudes towards the older worker or the older worker's attitudes to work and career. It can deal with learning and qualifications, interventions by the state, seek to change the older worker's situation in the labour market generally or address issues of health and work, job design and many others. Meanwhile, Liwiński and Sztanderska define age management as an element of human resources management, and more specifically: element of diversity management. It involves undertaking various actions to more rationally and effectively use human resources in enterprises by taking into account the needs and capabilities of employees from different age groups (Liwiński and Sztanderska, 2010; Tupa, 2013; Gorzeń-Mitka 2016). Hence, the Age Management can be investigated and presented from the individual, corporate or macroeconomic labour market policy perspective (Fabisiak and Prokurat 2012). Urbancová and Hlavsa (2014) indicate four levels at which age management is defined:

1. Individual level – involving strategies that concentrate on individual employees and refer to skills, health and life quality, social relationships and benefits brought by older employees to an organisation.
2. Collective level – strategies that are based on a dialogue between trade unions and employers.
3. Corporate level - involving corporate level strategies for preserving (retaining) skills and labour, knowledge transfer, human resources management techniques and modification of work organisation and working time.

4. Social and political level - referring to strategies developed by individual countries' governments covering such problems as: labour market participation of older people, improvement of life and health quality, lowering of pension costs and health and social care.

In the context of an organisation, age management is defined as an organisation's set of tools, skills and knowledge used to attract, manage and retain older employees to ensure that organisational objectives are achieved. It involves various aspects of an organisation, such as recruitment and selection, work reorganisation, multigenerational management of human resources, effectiveness management and well-being (SNEF, 2013). Casey et al. (1993) pointed out five main dimensions of age management in organisations: recruitment and dismissals, training courses, development and promotion; flexible work form, ergonomics and designing of workplaces; change of attitudes towards employees' ageing. A somewhat different division of age management areas in organisations was presented by Neigel and Walker (2006). They distinguished: recruitment and selection; development of professional career; flexible forms of employment; health protection and promotion; shifts across positions; ending employment and retirement. There are different areas of age management, but, as stressed by Ciutiene and Railaite (2015), we can distinguish key ones, namely: job recruitment, flexible working practices, learning and knowledge management, changing attitudes, workplace environment, health management and ergonomics. (tab. 1)

**Table 1. Key Age Management Areas** (Ciutiene and Railaite, 2015)

	<b>Fabisiak, Prokurat (2012)</b>	<b>Kuperus, Stoykova, Rode (2011)</b>	<b>Streb, Voelpel, Leibold (2008)</b>	<b>Ball (2007)</b>	<b>Druny (2001)</b>
<b>Age management areas</b>	Learning, training and lifelong learning	Lifelong learning	Knowledge management and learning	Training, development & promotion	Learning, training and development
	Comprehensive approaches	Corporate social responsibility	Managerial mindset	Changing attitudes within organizations	Changing attitudes within organizations
	Workplace design		Work environment, ergonomics	Ergonomics, job design & prevention	Workplace design
	Health protection, promotion	Occupational health	Health management		Health promotion
	Flexible working time practices			Flexible working practice	Flexible working practices, the modernization of work

	Career development, redeployment	Job recruitment	Human resources management	Job recruitment	Job recruitment
	Employment exit and the transition to retirement			Changes in exit policy	Employment exit and the transition to retirement
		Diversity management, antidiscrimination			Promotion and internal job changes

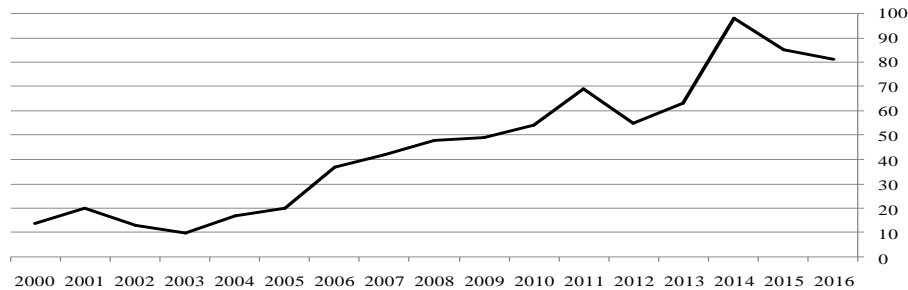
### Methodological Information

The article presents the results of the bibliometric analysis of the scientific research regarding the concept of age management. The authors based the analysis on terms "age management" of the publications in Scopus database. Scopus was the database which provided data for the analysis, where the number of registered publications related to problems issues appeared higher than in the case of the Web of Science and Science Direct databases. The Authors focused on publications indexed in the Scopus database until 2016. The resulting database terms selected from titles and abstracts have been ordered and partially aggregated. Based on them, the VOSviewer tool (VOSviewer software (Visualizing Scientific Landscapes). Version 1.6.5. Developed by the Leiden University Centre for Science base and Technology Studies in the Netherlands) was used to prepare a graphical presentation of frequency and co-occurrence with the rest of the analysed group. Data selection and research procedure using the application VOSviewer was adapted from study by van Eck and Waltman (2016), Gudanowska (2017) and Olszewska (2017). The analysis of the co-occurrence of words was performed with the use of the VOSviewer software van Eck and Waltman (2016). This paper is prepare as results of a state of the art in academic studies. Based on Anthony F.J. van Raan (2014) study, bibliometric analysis identifying the areas of research within the concept of age management took place in following steps of research: step 1 - searching for records in the Scopus database meeting the set criteria, and exporting them to the .ris file.; step 2 - mapping and development of the visualization of links between keywords, title, abstract and clusters of research areas and step 3 - analysis of results.

To analyze the current research trends among leading academic publications associated with the age management area, the Authors verified the number of publications available in the Scopus and Science Direct databases. While analyzing the number of publications indexed in the Scopus database, a considerable growth in the age management subject could be observed. It was used Scopus database for further analysis. Because, the objective of the article was to take a closer look at the contemporary trends in age management area we made a more detailed analysis

based on the publications issued within the until 2016 in this subject (900 papers for "age management").

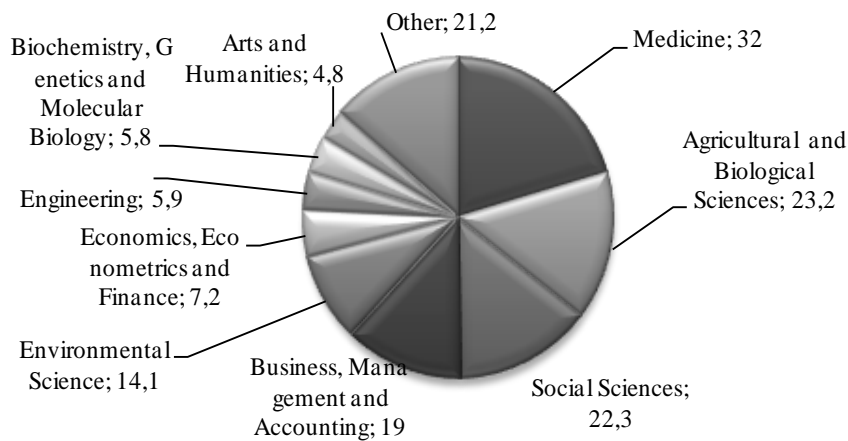
Research activity on the age management concept, was assessed by the number of publications (aggregate values and number of publication for each year of a period 2000-2016) (fig. 1).



**Figure 1. Number of academic literature in age management area (until 2016 in Scopus database)** (own processing, data extracted from Scopus database)

This indicates, on the one hand, growing interest in the issues of age management, on the other hand, this matter is in the initial phase of the interest of researchers (a low number of publications). It should be stressed that in the period there has been a fourfold increase in the number of publications in the analyzed area.

Problems of age management occurs most often in conjunction with the analysis of problems in medicine (32%), agricultural and biological sciences (23,2%). Further in the order they are issues of social science (22,3%) and business, management and accounting (19%). Detail is presented in Figure 2.



**Figure 2. Top 10 research areas by age management subject (until 2016 in Scopus database [%])** (own processing, data extracted from Scopus database)

Terms from titles and abstracts and their co-occurrence were the elements representing the content mentioned in the articles were. To present a clear visualisation, this paper focuses on those expressions that appeared at least twenty times in a group of selected publications. The analysis disregarded the terms "age management", "ageing" and other general interest (list of disregarded terms: term, abundance, action, area, aspect, attitude, author, bird, book, case, cat, challenge, chapter, concept, conclusion, context, control, country, day, example, exposure, extent, field, focus, grade, growth, height, imscet, incidence, interaction, introduction, issue, job, majority, material, mean, month, operation, outcome, paper, patient, period, plot, practice, presence, purpose, question, rat, relation, research, resection, resource, respondent, response, scale, sector, site, situation, size, space, stand, structure, support, survey, technique, theory, type, view, way, week, work, worker, world). The data was analyzed with use the VOSviewer program (van Eck and Waltman, 2016).

### Age Management - a Map of Research Trends (Results and Discussion)

Within the conducted analysis, it was prepared a map of research trends associated with the age management problem based on selected Scopus network data from period 2000-2016. In the group of terms from title and abstract field with the highest occurrence ratio (tab. 2) are as following: older worker, treatment, forest, employee, species, policy, tumor, diversity, organization, tree.

**Table 2. Age management cluster 1 - analysis results** (processing via VOSviewer program, data extracted from Scopus database)

Terms	Total link strength	Ooccurrences	Terms	Total link strength	Ooccurrences
older worker	2827	299	enterprise	388	47
employee	2679	257	learning	463	47
policy	1410	170	age discrimination	459	46
organization	1360	163	older person	382	44
health	1186	130	gender	506	42
company	1079	120	perception	361	42
life	1116	117	employability	513	41
workforce	1154	116	implementation	345	39
implication	1125	101	labour market	412	38
work ability	673	95	skill	384	37
workplace	854	78	HRM	239	36

employer	925	75	disability	407	35
industry	510	75	job satisfaction	294	34
society	667	68	motivation	399	33
technology	382	67	active ageing	231	32
opportunity	618	65	older employee	386	31
perspective	448	65	discrimination	266	29
employment	753	63	design methodology approach	380	26
knowledge	513	55	future	167	25
generation	765	54	age diversity	317	24
retirement	589	51	practical implication	300	21
training	534	48	demographic change	442	47

In the next step of analysis it was identified of the clusters, in which the most frequently occurring terms were found. In this case, terms from title and abstract field - in three (tab. 3). Then was create a co-occurrence map based on text data (terms from title and abstract of publications referring to the age management area). A analysis of clusters was made in the next step.

The first classified cluster in VOSviewer (Cluster 1 by terms) was a group of issues associated, among other things, with the human resources. These classified cluster involved issues that stricly refers to the topic of this work and concerned on workers and organization perspective. The most frequent and the most interrelated component in the cluster was older worker exhibited a very strong relation inter alia with work place, health, organization, company and workforce.

Thus, it can be concluded that age management in the area of labour market is a comprehensive approach that aims, among other things, to focus on preventive activities against elimination of older employees and to use remedial tools towards those who have age-related employment problems, e.g. insufficient qualifications or health problems resulting from overwork (Liwński and Sztanderska, 2010).

Cluster 2 shows wide connection of age management with medical terms. Population ageing also involves health problems. At this point it's worth mentioning Age Management Medicine concept. It is a proactive, preventative approach to healthcare for an aging population focused on preservation of optimum human function and quality of life. The basic tenets of Age Management Medicine are patient evaluation through extensive medical history, lifestyle assessment, physical examination and laboratory evaluation to establish personalized proactive treatment plans consisting of proper diet, exercise, stress management and appropriate medical intervention (AMMG, 2015).

**Table 3. Age management cluster 2 - analysis results** (processing via VOSviewer program, data extracted from Scopus database)

Terms	Total link strength	Ooccurrences	Terms	Total link strength	Ooccurrences
treatment	2448	291	cancer	296	52
tumor	1559	167	diagnosis	478	48
risk	1088	125	duration	482	43
function	904	111	intramedullary spinal cord tumor	528	41
surgery	1027	107	risk factor	392	39
child	587	91	adult	290	38
woman	983	90	mortality	321	35
disease	705	87	female	260	33
symptom	1073	76	man	460	33
pain	560	64	pregnancy	181	30
survival	593	63	male	210	29
ependymoma	687	62	gross total resection	362	21
improvement	695	62	mean age	250	20

To surprise of the authors of this publication, Cluster 3 by terms shows connection of age management with economic sectors, e.g. wood industry, which may indicate that this concept is also considered in the context of the protection of the environmental and forest resources. At this point, it's worth mentioning the concept of forest management. It is the process of planning and implementing practices for the stewardship and use of forests and other wooded land to meet specific environmental, economic, social and cultural objectives. It deals with the overall administrative, economic, legal, social, technical and scientific aspects related to natural and planted forests. (see more: FAO)

**Table 4. Age management cluster 3 - analysis results** (processing via VOSviewer program, data extracted from Scopus database)

Terms	Total link strength	Ooccurrences	Terms	Total link strength	Ooccurrences
forest	2097	286	soil	310	48
species	1688	203	management practice	460	43
diversity	1627	163	forest management	311	36
tree	1241	160	variation	340	36



index	1051	107	silvicultural treatment	385	25
density	1008	104	timber	171	25
distribution	695	85	biodiversity	275	24
harvest	544	63			

Cluster analysis by the term presents a broader perspective on the problems of age management, than cluster analysis by keyword (see: Olszewska, 2017; Gudanowska, 2017).

### Limitation of This Study

While this study contributes to both literature, some limitations open up avenues for further research. First, age management is undoubtedly a multidimensional concept, and in this study is investigated only leading trends in areas in it. There are many other areas of challenges in age management and future research should investigate the relationships between other dimensions of this concept. Second, this research aimed to identify selected challenges in an exploratory way. Future research could extend this research concept here identified complementing it with dedicated areas such as business aspects. Finally, based on this study, future research could use this findings in management practice.

### Conclusion

The effects of population ageing are visible at many levels. The changes affect individuals, organisations, economies and societies. The multifaceted character of the issue of "age management" has also been confirmed by the research conducted. Based on the method of Bibliometric s, which has been used to review selected concepts connected with age management, it can be concluded that this concept is more and more often considered not only in the demographic context, but also medical and organisational ones, as well as in the context of forest area management.

The analysis shows that the issues addressed in this publication are most often considered within medicine, agricultural and biological sciences, social sciences as well as business, management and accounting. Age management at the corporate level contributes not only to retaining valuable employees but also to tackling other challenges connected with employees' ageing. Taking actions aimed at taking better care of health and increasing productivity is becoming not only an individual but also organisational goal.

The results of the research allow:

- indicate for development of specific research areas within the framework of human resources management,
- to collect and share knowledge about contemporary trends in age management strategy, which may to inspire extension of the research in this scope.

Therefore, the research could be useful to identify the areas of knowledge necessary to improve work productivity in human resources management frameworks.

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## WIELOFUNKCYJNY CHARAKTER ZAGADNIENÍ ZARZĄDZANIA WIEKIEM

**Streszczenie:** Zarządzanie wiekiem to szeroka koncepcja, przedstawiona w różnych kontekstach i związana z wieloma kwestiami, takimi jak: starzenie się społeczeństwa, medycyna, aktywne starzenie się, zarządzanie różnorodnością czy przeciwdziałanie dyskryminacji. W rezultacie znaczenie procesów demograficznych jest coraz częściej uznawane przez licznych badaczy z różnych dyscyplin naukowych jako niezwykle istotne. W kontekście studiów nad zarządzaniem widzimy rosnącą popularność koncepcji zarządzania wiekiem, jako jednego z instrumentów łagodzenia skutków starzenia się i kurczenia się potencjalnej siły roboczej. Celem niniejszej publikacji było przedstawienie działalności badawczo-rozwojowej w zakresie zarządzania wiekiem opartej na wykorzystaniu bibliometrii do przeprowadzania analiz ilościowych

publikacji naukowych dotyczących zagadnień poruszanych w badaniach. Autorzy skoncentrowali się na publikacjach indeksowanych w bazie Scopus. Badania ujawniły wieloaspektowy charakter tej kwestii.

**Słowa kluczowe:** zarządzanie wiekiem, starzenie się, organizacja, analiza bibliometryczna

### 多元化的年齡管理問題特徵

**摘要:**年齡管理是一個廣泛的概念，呈現在各種背景下，涉及人口老齡化，醫學，積極老齡化，多樣性管理或反歧視等諸多問題。因此，人口統計學的重要性越來越受到各個科學學科的眾多研究人員的認可。在管理研究的背景下，我們可以看到年齡管理這個概念越來越受歡迎，它是緩解老齡化和潛在勞動力縮小的手段之一。本出版物的目的是介紹基於使用文獻計量學的年齡管理領域的研究和開發活動，以對科學出版物進行定量分析，研究研究中涉及的問題。作者集中於Scopus數據庫索引的出版物。這些研究揭示了這個問題的多面性。

**關鍵詞:**年齡管理，老化，組織，文獻計量分析。