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СОДЕРЖАНИЕ

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Lifelong learning as a tool for the development of smart cities: technology enhanced learning as an enabler

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ABSTRACT
This paper considers the ubiquity of technology as an enabler for lifelong learning in modern society and the impact this dependence on technology has on the strategic design of learning systems. The role of lifelong learning in modern economies and the diversity of activities associated with lifelong learning requires targeted resourcing and understanding of the meaning of lifelong learning. The dominance of technology enhanced learning in modern education is accepted as a de-facto component in the design of any learning programme. The literature on the technology enhanced learning – smart city nexus explores the technology in depth with a strong focus on learning analytics and big data applications. Evidence of the pedagogical paradigm requirements is not quite so visible and this lack of understanding of the complete model creates tensions in the design of lifelong learning systems. The agency of active learning is considered in the sense of the triune of human, education and economic, systems for the sustainable growth of a knowledge economy. Structured approaches to learning are demonstrated and comparison is drawn with smart city projects in Ireland and the United Kingdom.

KEYWORDS
lifelong learning, technology enhanced learning, smart cities, e-learning, smart learning, massively open online courses, Russia, Ireland, United Kingdom

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Непрерывное обучение в качестве инструмента для развития умных городов: технологии, способствующие обучению

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АННОТАЦИЯ
В статье рассматривается повсеместное распространение технологий в качестве инструмента для непрерывного обучения в современном обществе, а также влияние их связи на технологии для стратегического проектирования систем обучения. Роль непрерывного обучения в современной экономике и разнообразие видов деятельности, связанных с ним, требуют целенаправленного выделения ресурсов и понимания смысла непрерывного обучения. Доминирование технологии улучшенного обучения в современном образовании признается де-факто компонентом в разработке любой учебной программы. Литература о технологиях, развивающих взаимосвязь между обучением и умным городом, подробно исследует эту технологию, уделяя особое внимание обучающей аналитике и приложениям для работы с большими данными. Доказательства требований педагогической парадигмы не так очевидны, и это непонимание полной модели создает напряженность в разработке систем непрерывного обучения. Учреждение активного обучения рассматривается в смысле триединства человека, образования и экономики, систем устойчивого роста экономики знаний. Показаны структурированные подходы к обучению и проведено сравнение с проектами «умный город» в Ирландии и Великобритании.

КЛЮЧЕВЫЕ СЛОВА
непрерывное обучение, технология улучшенного обучения, умные города, электронное обучение, умное обучение, массово открытые онлайн-курсы, Россия, Ирландия, Великобритания

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Introduction

The role of technology is accepted as a central tenet in modern society and this acceptance is visible in the use of technology for learning at all levels of education. Education in modern society is inextricably linked to the highly complex ecosystem of the national economy and is considered to be a fundamental component of the smart city [1]. A smart city should support learning and be supported by learning within the agencies of economy, environment, governance, living, mobility, and people [2]. Integration of all factors to support the smart city requires education, and in particular, a highly integrated university-city nexus.

The context for the smart city phenomenon is the growth in the percentage of urban population. The urban population is expected to increase globally to 70 percent by 2050 [3]. In Europe, the population is expected to increase to 80 percent by 2020, whilst the population living in urban areas of Russia is currently 75 percent. The growing importance of cities is recognised globally, and the associated anthropological development requires an appropriate paradigm to address the needs of urban societies to ensure sustainability [4] as cities adapt to the needs of their inhabitants. An issue of concern in research, design and development of an appropriate paradigm for lifelong learning in a smart city is the lack of consensus amongst urban policy makers as to what actually constitutes a smart city [2; 3; 5; 6].

The paradigm for any socio-learning nexus requires an understanding of the needs, purpose and aims of the learning within the context of the society in which it occurs. Anthropological evolution in terms of learning has experienced quantum leaps since the industrial revolution, requiring creativity to maintain learning relevance associated with and within society. The definition of "smart city" by Kominos, cited in [7, p. 29], includes digitally qualified workforce but makes no reference to how less qualified members of society may participate in a meaningful manner. The rich eco-system of the modern smart city has evolved beyond *territories with high-capacity for learning and innovation*. Gianni and Divitni [7] focus on smart cities as places where *citizens learn smart behaviours,* with active students engaging in the learning process and where every citizen can be involved. The mapping process [7] considered the social and urban perspectives of the smart city within the fixed domain of the city as an urban space, but it does not consider the widening of access to extend beyond fixed communities of learners.

The lifelong learning process implies active engagement of living within the city and generating knowledge; the traditional nexus of learning within a fixed community is a considerable bond. Modern discourse in relation to the paradigm of learning focuses on the connectivist [8] elements of technology enhanced learning, but does not address the desire for the technology to generate an additive component [9] to the learning process. In this discourse, the emphasis is placed firmly on the technology with little or no emphasis on the learner, thus, the derogation of the role of learning within the technology enhanced paradigm produces a lens on the technology instead of an active agency of the learner. The technology focus sidesteps issues of institutional pressure to conform through the use of technologies. When Skinner [10] developed the behaviourist "teaching machine", his work complemented the theories developed by Weiner & Shannon [11] to produce a foundation for technology enhanced learning. However, Weiner & Shannon debated robustly to maintain that the learner should be the central agent within the learning communication processes. The critique of learning in a technology enabled environment focuses largely on the hardware and software for communication but does not consider the one which is developed for pedagogical purposes. Goodwin & Speed [9] refer to *digital cognoscenti* in relation to the hegemony of the technology without defining the meaning of this term, but sufficient nuances are place-marked to lead to the conclusion that the technology is deemed to dominate the learner.

The hegemony of technology enhanced learning in the Global North [12] and the tensions created when considering the design implications for meaningful learning within the lifelong learning process are complex and distributed within a wider socio-economic-historical framework. The tensions and problems to be addressed within the smart city learning conundrum present new challenges for educational designers at all levels of the education system. At the macro level, national and international policy makers require knowledge of the paradigm and the tensors affecting the paradigm. The meso level of the region addressed by the strategic approaches of the universities is heavily dependent on the policy decisions of the government, leading to governance of the actions of educational designers at the micro level. The

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smart city should be cognizant of the tensions, actors, processes and products, when reliance is placed heavily on poorly defined constructs.

The definition of the smart city requires a fundamental understanding of all components within the design of the supporting framework. The model presented by Hammad & Ludlow [8, p. 188] creates a demarcation between the city model and the smart learning environment. The learning separation in this context does not suggest full integration of learning within the smart city model and reduces the voice and presence [13] of the learner as an active agent; the expectation of digital competence and strong self-regulatory skills creates a mask for designers to hide behind. Encapsulation of learning within the smart city context requires data for evidence, analysis, and support of all activities. Greater integration of data – mindful of ethical considerations – offers potential for targeted, mobile and flexible learning. The personal, civic, professional and social skills of the learner may be optimised through appropriate analysis and support. Mobility and flexibility of learning may be achieved through adaptable learning spaces using the artefacts of technology enhanced learning to support adaptable spatial and temporal design processes [14; 15].

Learning is a holistic process and the nexus with the complex ecosystem [8] of the smart city requires a holistic paradigm. Inter- and intra-connectivity is vital to ensure that all agents are supported by the artefacts of technology enhanced learning. The holistic support of lifelong learning within a sustainable smart city model is fundamental to the growth of the city, society and the learner.

Widening of access beyond the traditional fixed community of learning has been made possible by developments in education around the concept of open e-learning [16] in the form of the Massively Open Online Course (MOOC). MOOCs appear in the form of learning available to all and support the concept of lifelong learning where opportunities are made available to learners throughout their life. The market created by MOOCs and the benefits received globally by learners and providers cannot be understated even in the face of the cynicism offered by some [17]. The MOOC model is an evolution of the traditional model where materials are developed by experts to satisfy the demand by employers such as universities or private companies. Greater participation with potential for inclusion and diversity is required to ensure that less optimised learners do not suffer from unequal access to resources [18; 19]. An adaptation of the MOOC in the form of the Connected Learning MOOC [20] offers potential for technology enhanced learning to support the production of digital artefacts through learning with and from other learners in a true community of practice [21]. The CLMOOC has demonstrated that it is possible for true flexibility of lifelong learning to occur outside the traditional school-university context.

The potential to re-order and re-imagine the lifelong learning paradigm using technology as an enabling mechanism is acknowledged in the following question: "How can online education… help less privileged people to learn and/or gain an acknowledged education?" [18].

This question can be addressed by examining the gaps between the open online education systems and the traditional university model. The study requires exploration of lifelong learning education model policies, practices and procedures. The gap may be bridged through the following: knowledge of active and passive agents within the education system; factors affecting resilience and motivation of high achievers as well as those who may also be low achievers; determination of meaningful quality criteria for methodological design of pedagogically sound and technology enabled paradigms for lifelong learning. It is not possible to address all the issues affecting lifelong learning as enabled through technology within a single study, however it is possible to place a lens on salient issues for generation of in-depth discourse. This paper addresses the key issues of socio-learning, motivation and belonging in the light of inclusion processes in an Open Learning society. Potentially, in a smart city context, lear-ners can be to enabled through the appropriate and optimised application and design of pedagogy.

Socio-learning in the smart city (urban) context

The smart city concept is based on the knowledge and innovation economy approach [5] enabled by the ubiquity of computer technology. The role of technology within a smart city environment is that of a *pusher*; solutions are elicited through rapid advances in science and technology, whether or not society or economy demands or needs them. The flip side of economy is the source of demand or the *pull*; solutions are provided in response to the demand created by society or economy. As the

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footprint increases to encompass the smart concept in the form of an agglomeration of connected spaces and attributes, so too does the complexity of the task of understanding the factors affecting the smart economy. The current smart economy is described as a push economy [5] supported by the current research evidence [6].

The ubiquity of technology has created a "noisy" environment experience for all actors, which means that learners and experts alike may be overwhelmed by the increasing *abundance* [22] of information, data, communication, and tools. The presence of this noise may have a mitigating or seriously detrimental effect on the learning experience depending on the user-technology attribute relationship. The shift towards the technology enabled environment [23] is reflected in the education curricula of schools and universities with a subsequent increase in vendor numbers offering solutions to perceived problems. The search for alternative learning spaces [14] may be associated with a desire to mitigate the effects of the digital noise flooding into the learning environment as a result of the technology *push* cycle.

Knowledge of the relationship between learners and the smart city environment may be determined through appropriate use of the opportunities offered by the presence of enhanced data gathering, i.e. big data. Lifelong learning is a social event, irrespective of people's age or socio-economic status. Learning does not take place in a vacuum or in a fixed temporal space. Social interaction is required and this fact must be considered within any technology enabled paradigm. Lifelong learning exists in a temporal continuum related to the societal and personal needs of the learner [24]; the mind develops at different times depending on the learner and how the learner has internalized their own experiences. As a direct result, the metacognitive awareness of the learner increases with age [25], leading to their engagement in a self-directed process as adults.

The opportunities presented by the increasing awareness of the metacognitive ability are alluded to in the discourse of lifelong learning in what is considered the fourth industrial revolution [26]. However, they are seen in the light that mostly illuminates the economic values in terms of productivity and value for money; at the same time lifelong learning offers much more than productivity and financial gain. Its alternative benefits may include social, psychological and internalized enhancements for the person and society.

Motivation and belonging: fostering the desire for learning

Lifelong learning does not take place within the constraints of a single domain of expertise as learners engage with opportunities for social and personal mobility [5]. Technology has been postulated as offering benefits to society as an enabler towards efficiency, sustainability, communication, democracy, education, health, innovation and creativity. The wonder of technology as a "pill for every ill" was discussed in the literature but little attention has been paid to the diversity of culture and society. To accommodate true lifelong learning within a multicultural, connected and integrated smart city environment, the learning paradigm must be cognizant of diversity. A failure to address the needs of diversity will result in a failure to be inclusive and to support the nurturing required by some for an enjoyable and immersive experience.

The socio-cognitive construct of self-efficacy [27; 28] is a vital consideration if the behavioural change is to take place. The highly complex context of a smart city may offer many opportunities, but it hides dangers, too. The dangers are in the form of a disadvantage to those learners that would be more commonly described as low achievers, socio-economic disadvantaged, having a learning disability, and the socially disconnected. Lifelong learning is recognised as requiring a certain degree of motivation and resilience to achieve personal goals and these attributes may be derogated in the internalized view of those not considered to be high achievers. It may be observed that the self-efficacy concept within metacognition refers to the learner's knowledge of their own cognitive ability, knowledge of the nature of cognitive tasks, knowledge of the strategies required to cope with such tasks, and the belief the learner has within themselves of being able to complete the task. In addition, the learner requires overarching skills to monitor and regulate their own cognitive activities.

The processes of learning can only be inferred, usually by a domain expert, as evidenced through writing, problem solving, etc., and there must be a definite link to allow the learner to claim that learning has been achieved [29]. The outcome must be judged to be fair – the valence must be considered appropriate [30]. The resulting motivation for the learner in a fair learning environment is critical to the sense of belonging the learner may have. The sense of belonging may

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be in the form of a professional standing, social enjoyment, hobby, re-alignment of beliefs, supporting a desire to participate more fully in the economic activity of the city. The sense of belonging to a particular domain is described in socio-sustainable healthy city project exemplars [31]. Belonging is described through spatial planning, best practice, participation and resilience, infrastructure, nature, people and place as an integrated construct encompassing all actors within the process. Belonging is cognizant of all factors including those considered less harmonious but necessary for further development and growth; belonging is being nurtured through learning.

Inclusion through Open Learning in a technology environment

If the role of an active learner is to be recognised, then an alternative is required in which the learner is central to active learning and which will use feedback as a facilitating mechanism [32; 33]. There is a widely spread opinion that learners entering higher education are accomplished self-directed and self-regulated learners, however, this perception [32, p. 705; 34] may be unfounded.

Pedagogy must accommodate the need to realign the learners with the need to identify with the community [21] of active learners. Active learners have a sense of their own learning and educational authorities are expecting that learners would take a greater responsibility for their own learning [35–37]. Markkula and Kune [38] recognise the need for an active learning paradigm to ensure that smart regions continue along the smart trajectory as universities adapt to their changing roles in society and economy. The function of the university is not globally homogeneous; this role has adapted to suit the region. The role of the *knowledge exchange platform provider* [38, p. 10] is the one that many universities have adopted to, connect, infuse knowledge, provide accessible learning, meet needs of society present and future, and prepare learners for engagement emerging capacity building exercises.

The knowledge platform is prioritized within the 2016 Russian Government project *Modern Digital Learning Environment in the Russian Federation* with the aim of expanding accessible learning to 11 million people by 2025. Central to the success of this project is the Open Learning platform using the Massively Open Online Course (MOOC) structure. The limitations of many MOOC designs have been recognised [39] by the project investigators and addressed through comprehensive determination of metrics for success in Open Learning.

An example of using MOOCs for inclusion is in smart cities, where MOOCs can perform the role of generating interest in innovative entrepreneurship [40]. The project revealed the need for constant dialogue between all actors in a smart city to ensure inclusion of all stakeholders and flexibility of learning spaces to promote interactivity. Of interest was the fact that the "technology environment" existed but the "smart learners" did not exist at the beginning of the process. The heterogenous nature of society must be accommodated to "close the loop" and engage all actors within the complex hierarchy of the smart city concept. Not all learners respond equally to the stimuli offered by a learning paradigm; the Open Learning technology mediated model has the potential to offer meaningful and inclusive engagement.

Project enabled collaboration in the online learning environment

Massive open online courses with a strong connectivist component and project-based learning tools have a great potential for involving broad sectors of the population in the processes of smart-city development and creating a comfortable urban environment. The involvement of various population sectors is made possible through Collaborative MOOCs, based on the interaction of all participants in learning by creating new knowledge and solving a common problem [41]. The peculiarity of this type of MOOC is equality of all participants in the learning process: they are all teachers and students at the same time. MOOCs are also characterized by the presence of built-in communication tools such as chats, blogs, wiki, social networks and others.

The project-based methodology has been developed by modern pedagogy in the recent decades [42; 43] as a way to enhance the student's intellectual activity and increase their motivation. This methodology offers strong potential for efficacious use of electronic and distance learning [44]. The essence of project training, according to J. Delors [45], is to "learn to learn, learn to do, learn to live together, learn to live", which are the fundamental components of lifelong learning. The methodological basis of project activity is described by J. C. Jones [46], J.-I. Beyk [47], and C. Frey [48], who are trying to overcome the one-

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side pragmatic interpretation of the process and results of the project and achieve a more humanistic understanding of the project as an activity component of learning aimed at developing the personality of a learner.

Implementation of the project method in online learning is not an easy task due to the lack of communication between the participants in the asynchronous online learning format. The student should have a certain level of preparedness and motivation for this type of activity. In addition, the introduction of project-based training requires a special pedagogical design of such online courses as well as support for students throughout the learning process. It is especially important to make it possible for students to solve the tasks step by step and to find adequate forms of testing learning outcomes [49]. Project results should be achievable and solutions should be optimal. The project should thus create conditions for students' acquisition of the necessary knowledge and skills and for their practical application, improvement and consolidation.

The Ural Federal University (Ekaterinburg, Russia) has considerable experience of involving high school seniors and college graduates in online project activities within the framework of the "Internet Test Drive" campaign, which was aimed at finding talented applicants and preparing them for study at the university. Thus, the university's experience provides a series of exemplars for the project learning methodology. In 2015–16, more than 500 young people were offered a choice of several real projects in various educational fields as a part of the programme of project-based collaborative learning:

1. The aim of the socio-cultural project *Cult – Drive* was to design a publishing product to attract public attention to the cultural and historical heritage of the city, demonstrating the values and characteristics of regional culture.

2. Engineering and technical project *Tech – Drive* was aimed at developing, preparing for production and launching a new product on the market. The project was based on the theory of inventive problem solving and used the corresponding methodology and tools.

3. The project in the field of robotics *Hi-Tech-Drive* offered its participants an opportunity to develop a real robotic complex, its 3D model, electronic circuitry and a program for autonomous control of the air-based robot *Ardron* (unmanned copter).

4. The development project *Stroy-Invest-Drive* included conceptualization, creation of a 3D model and assessment of the effectiveness of investment in the construction of a socially significant real estate object for a region, city, or village with an emphasis on "green" technologies.

5. The project in the field of information technologies *Mobile-Drive* offered its participants an opportunity to create a real mobile application for smartphones on one of the three mobile platforms: iOS, Android or Windows Phone.

6. The natural science project *Nature – Drive* offered an exciting quest about the laws of nature.

7. The informational and technical project *WEB-Drive* involved students in the process of creating a real WEB-application (website) in a high-level language: from deploying the development environment to posting the resulting application on the Internet.

8. The socio-economic project *HR – Drive* was aimed at creating a business (start-up project), with a group of participants working towards a common goal – generating income from commercial activities.

All projects were designed to produce an authentic experience of problem solving and be as close as possible to real professional activities in each area. The results had a practical significance for the community. The participants were divided into teams of 6–8 people and worked on projects remotely through an electronic information and communication environment, using built-in and external interaction services. During their training, students mastered MOOCs, passed learning outcomes assessments and took part in webinars, where practical issues and problems arising during the project implementation were discussed. The results were presented at the final defence of the projects, which involved teachers and experts.

The potential exists for appropriate scaling of the authentic problems and for them to be used as a mechanism for involving wide sections of the population. The collaborative involvement of various groups of people as a community of active participants offers considerable potential for enhancement of urban learning development processes.

Exploration of learning in technology enabled smart/modern cities

Rhetoric on the smart city vision is bounded mainly within two discourses: the marketing material of large IT companies and academic liter-

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ature [50]. Both discourses place the lens firmly on technology as a normative component of the modern city and the co-presence of the citizen is relegated to that of a partially informed bystander. In line with the definition by Kominos [7] and the driving technology economic push [5; 6], the smart city concept has been explored in Ireland and expanded to include the concept of the smart region.

Smart city projects are operating in the Republic of Ireland (Dublin, Limerick, Galway, Waterford and Cork) and in Northern Ireland (Belfast and Derry). The forum connecting smart cities is located in Maynooth University and enables them to share insights, experiences and promote collaborative research. The transnational networked group of smart cities operates on the basis of a national and local-level epistemic community [51].

Critique of the literature of the smart city projects in Ireland reveals little substance relating to the participation of the citizen [52]. The goals of the smart city projects (to stimulate economic activity, address regional challenges, optimize sustainable actions, and enhance SME competitiveness) are to be achieved with the help of industry or universities. Concepts of co-creation, partnership, and citizen-led agency are not highlighted, rather, they are placated by token consultations and paternalistic actions by experts and civic leaders. Kitchin et al [51] identify these issues as the "last mile problem". The programmes of research and implementation are met with increasing apathy by the staff involved in the projects. There is also considerable inertia and internal resistance in what concerns governance, policy implementation and support for technology driven activities. It is reasonable to suggest that many technological solutions are proffered regardless of social need or historical context. The role of the epistemic community may be viewed with suspicion when attempting to provide a solution to a multifaceted and highly complex urban problem. Within the epistemic community it may be very difficult to determine the role or voice of the human community within the "city problem" [51].

An expanded form of the smart city concept is the smart region as it aims to address the needs of the regional economy supported by the EU regional policy [53]. The region explored within this project consists of the sparsely populated counties of Western Ireland and those forming the border with Northern Ireland. Using the characteristics defined by Markkula [38], the Smart Places Region [53, p. 569] project is under way as an initiative driven by the Northern and Western Regional Assembly, the Western Development Commission and the Insight Centre for Data Analytics at the National University of Ireland, Galway. The region is serviced by a single university and three institutes of technology in Galway, Sligo and Letterkenny, however, changes in the higher education landscape in Ireland have led to political pressure to merge several institutes of technology to form a technical university.

In response to the online survey conducted for the Smart Places Region, the most popular priority identified by respondents was the smart community. This response supports the critique of the smart concept by Cardullo and Kitchin [52], who conclude that significant effort is required to ensure that citizens are seen within the spotlight of "smart" and that "smart citizenship" becomes the norm.

In parallel with the smart initiatives under way in Ireland, Borkowska and Osborne [54], it is interesting to examine the role of inclusion within the British smart city of Glasgow by using the quadruple helix model. In this model, citizens are seen as active users of the city, they are central players within the decision-making processes and technology is evaluated in order to ensure that it meets the needs of citizens and society. Learning provides a foundation on which the inclusion of citizens is to be built and the concept of smart city is now expanded to include a learning framework. Tensions within the smart city concepts are prevalent in the discourse of smart cities in Ireland, which was pointed out by Kitchen et al [51]. The same applies to Glasgow: citizen engagement at all levels is uncommon and the infrastructure for learning is not fully provided for; the technology should not be "pushing" education and learning.

Community-based learning, whether it be individual, group, community, or industrial, has the potential to tap into citizenship in its truest sense by involving all citizens and not merely those considered to be epistemologically strong in the digital sense.

Conclusion

The hegemony of technology enhanced learning is increasingly difficult to ignore or resist in pedagogical design of modern learning paradigms; its ubiquity is undoubtable. The social logics of technology enhanced learning and the alliances formed around it are such that its incorporation into the fabric of society is expected. The hetero-

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geneous nature of learning and lifelong learning is such that designers must remain cognizant of the complex interactive nature of the actors, tensions and affordances of technology enhanced learning. Re-imagining the pedagogical paradigms to maintain alignment with the needs of society in association with the hegemonic nature of technology enhanced learning is an increasingly difficult problem. The pedagogical paradigms must not lose sight of the fact that in the face of technological dominance, the ultimate goal is satisfaction of the needs of society members.

The role of technology enhanced learning as an enabler for lifelong learning is beyond doubt in the modern–smart city and beyond. The connectivist nature of the technology is demonstrated in the presence of Open Learning paradigms, whether used in traditionally designed modes of learning or in expansive and creative community-based modes. The technology is capable of serving social, educational and economic systems.

Research is required to consider the nuances of lifelong learning enabled by technology and address the gaps in the learning paradigm. The exemplars of collaborative learning experiences enabled by technology enhanced learning delivered through project-based pedagogies suggest that true interactive and vicarious learning can occur. Further exploration of the nature of collaboration should be encouraged to establish the best practice for social inclusion of those less motivated to enable them to participate more fully in society.

It may be some time before the stakeholders and actors in smart cities, smart regions, and smart economies fully address the recommendations by UNESCO [55] for Adult Learning and Education. The role of lifelong learning in adult learning in its many guises is essential to allow people to engage and participate fully in society. It is an imperative that the technocrats do not encumber the role of the citizen.

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Strategic priorities in the development of large Russian cities

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ABSTRACT
The paper discusses problems of strategic planning and management in the Russian Federation, primarily the lack of comprehensive methodological approaches to strategic planning in regions and cities, especially to selecting priorities of their socio-economic development. The conceptual framework of this research is based on strategic management theory and theories of regional and spatial economics. The paper also reviews Russian and international approaches to the concept of strategy and to strategic planning and management in general. The author analyses the key strategic planning documents of million-plus Russian cities, such as Perm, Novosibirsk, Ekaterinburg, Kazan, and others. These cities are a major driving force behind the country's economic development. In the paper, they are divided into three groups depending on the time period of their strategies. The conclusion is made that the optimal choice of priorities and adequate control over the implementation of these strategies are crucial for their success. In other words, it is necessary to improve the currently existing mechanisms of strategic planning and management to ensure more efficient development of urban territories. Moreover, most strategies focus only on those processes and phenomena that fall within the jurisdiction of local authorities although it would be much more effective to involve all groups of stakeholders and facilitate their cooperation in achieving common goals of the city's development.

KEYWORDS
strategy, strategic planning, strategic management, large city, priorities of urban development

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Стратегические приоритеты развития крупных российских городов

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АННОТАЦИЯ
Статья посвящена анализу проблем процессов стратегического планирования и управления в Российской Федерации, одной из которых является отсутствие единых методических подходов к формированию документов стратегического планирования территорий, в том числе к определению перечня направлений их стратегического развития. Методологическая база исследования основывается на теоретических положениях стратегического менеджмента, региональной и пространственной экономики. Подходы российских и зарубежный ученых к стратегиям, этапы эволюции стратегического планирования в России, а также особенности разработки (актуализации) документов стратегического планирования территорий раскрыты путем использования совокупности методов: диалектического, причинно-следственного и т.д. Представлены стратегические цели, целевые ориентиры современного развития Российской Федерации. Акцентировано внимание на необходимости применения механизмов стратегического планирования и стратегического управления развитием территорий. Проанализированы приоритеты, закрепленные в основных документах стратегического планирования мегаполисов Российской Федерации. Сформулированы рекомендации по определению состава приоритетных направлений стратегии социально-экономического развития. Теоретическая и практическая значимость исследования заключается в том, что оптимальное выстраивание приоритетов стратегического развития, их грамотная реализация, организация системы стратегического контроля и т.д. обуславливают прогрессивность социально-экономического развития территорий различных иерархических уровней.

КЛЮЧЕВЫЕ СЛОВА
стратегия, стратегическое планирование, стратегическое управление, крупный город, приоритеты городского развития

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Introduction

To ensure a breakthrough in Russia's scientific, technological and socio-economic development, to raise the living standards, to create comfortable conditions for life and work, the government of the Russian Federation set the goals of national development for the period until 2024[1]. These goals include the following: "to accelerate technological development of the Russian Federation and increase the number of organizations engaged in technological innovation; to ensure digitalization in economy and in the social sphere; to put every effort into making Russia one of the top five world economies by enhancing economic growth so that growth rates would exceed the world rates and by maintaining macro-economic stability; to create a highly productive export-oriented sector relying on modern technologies and highly qualified workforce within the key branches of economy, primarily manufacturing industry and agriculture"[2].

This paper aims to analyse strategic planning documents of large Russian cities and to provide recommendations for selecting priorities of their socio-economic development and improving their strategic planning and management practices.

[1] *On National and Strategic Goals of Development of the Russian Federation Until 2024: Decree of the President of the Russian Federation of May 7, 2018 No. 204*. Retrieved from http://www.garant.ru/products/ipo/prime/doc/71837200/

[2] Ibid.

Methodology

Our study of large Russian cities is based on a comprehensive analysis of their development strategies or, in the absence of an approved strategy, other similar documents. Our analysis also focuses on the key stages in the cycle of strategic planning and management. The methodological framework comprises the dialectical method and cause-and-effect method; analysis of the environment – internal and external – methods of strategic analysis; goal-setting – mission, aim, system (*tree*) of goals, system (*tree*) of problems and causes; strategy building – priorities, programs, and projects; mechanisms of strategy implementation; system of monitoring and control over strategy implementation.

In this article, we are considering only the cases of million-plus Russian cities and their strategies.

Strategic planning and management has been extensively discussed in contemporary literature. There are different definitions of the term *strategy* (starting from the micro-level) (see Table 1).

Table 1

Definitions of the term "strategy"

Source	Definition
G. B. Kleiner	Strategy of an enterprise is a complex of coordinated decisions that have a major impact on the operation of this enterprise and that will have an all but irreversible long-term effect on its performance [1].
M. Porter	Strategy is a set of offensive or defensive actions to create a defensible position in an industry, to cope successfully with competitive forces and thus get a higher return on investment [2].
A. A. Thompson, A. J. Strickland III	Strategy is a set of competitive changes and business approaches that managers perform to achieve the best performance of the company. It is the managerial plan to enhance the organization's position in the market, boost customer satisfaction and achieve performance targets [3].
I. Ansoff	Strategy is a set of rules for decision making to guide the behaviour of an organization [4].
H. Mintzberg, J. B. Quinn, S. Ghoshal	Strategy is a combination of five Ps: 1. strategy as a plan; 2. strategy as a ploy – a manoeuvre intended tooutwit an opponent or competitor; 3. strategy as a pattern, consistency in behaviour, whether or not intended; 4. strategy as a position, that is, a means of locating an organization in what organization theorists like to call an "environment"; 5. strategy as a perspective, its content consisting not just of a chosen position, but also of an ingrained way of perceiving the world [5].
E. G. Animitsa, V. S. Bochko	Strategy is a prognostic plan incorporating mutually conditioned goals and objectives of the city's development, internal resources, policies and major organizational activities (or programs and projects) aimed at achieving the goals and implemented within the approved city policy [6].
I. D. Turgel	Strategy is an institutionalized process of combining the existing and potential resources to achieve the key goals of urban development. This process relies on comprehensive analysis of the internal and external environment and should be approved by the local community [7].
E. A. Utkin	Strategy is a detailed comprehensive plan intended to enable the organization to fulfill its mission and achieve its goals [8].
R. A. Fatkhutdinov	Strategy is a program or a general plan of management to achieve strategic goals in any sphere [9].
N. M. Surnina	Strategy is a direction, a trajectory of future development which is expected to lead to the achievement of desired goals [10].

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In line with the best practices of strategic planning, both Russian and international, we understand a strategic plan (strategy) as a statement of general consensus about the priorities (strategically important areas) in the development of the territory shared by various groups and communities [11]. Therefore, it is particularly important to take into consideration interests of a wide range of stakeholders while selecting strategic priorities [12].

Strategic Planning and Strategic Management in the Russian Federation

Systemic transformations in the country's strategic development require coordinated effort of all its constituent units. The Federal Law No. 172-ФЗ "On Strategic Planning in the Russian Federation"[3] was approved in June 2014.

Strategic planning in Russia suffers from the lack of appropriate legislation to regulate this process. In 1997, the first strategic document was designed – "Strategic Plan of St. Petersburg", which was followed by similar documents of other large Russian cities [13]. There exists a vast body of research concerning development of large and super-sized cities [14–16].

We believe that strategic planning and management in Russia is currently facing the following problems: the lack of comprehensive methodological guidance, which is crucial for designing and implementing strategic plans; the lack of adequate legislation; insufficient coordination of strategic and territorial planning and management; the lack of a clear understanding as to who should be involved in these processes as well as the inadequate organizational structure; and the lack of integral mechanisms for strategic planning control and implementation.

Therefore, it is essential to continue improving the quality of strategic planning and management, especially in cities and regions (processes of designing, updating and implementing these strategies). It should be noted that forecasting [17], strategic planning and management, including methodological guidance [18–20], are the focus of much scholarly attention in Russia.

Priorities of Strategic Development of Large Russian Cities

Large cities are among the major drivers of economic development in Russia. In this paper we are going to discuss priorities described in the strategies of million-plus Russian cities (see Table 2)[4].

Table 2

Key strategic planning documents of Russian million-plus cities

City	Current version of the key strategic planning document
Volgograd	Strategy of Socio-Economic Development of Volgograd until 2030
Voronezh	Strategic Plan of Socio-Economic Development of the Municipality of Voronezh until 2020
Ekaterinburg	Strategic Plan for Development of Ekaterinburg until 2030
Kazan	Strategy of Socio-Economic Development of the Municipality of Kazan until 2030
Krasnoyarsk	Program of Socio-Economic Development of Krasnoyarsk until 2020
Nizhny Novgotod	Strategy of Socio-Economic Development of Nizhny Novgorod for 2017–2022
Novosibirsk	Strategic Plan for Sustainable Development of Novosibirsk
Omsk	Strategy of Socio-Economic Development of Omsk until 2025
Perm	Strategy of Socio-Economic Development of the Municipality of Perm until 2030
Rostov-on-Don	Key Areas of the Strategy of Socio-Economic Development of Rostov-on-Don until 2025
Samara	Strategy of Comprehensive Development of the Municipality of Samara until 2025
Chelyabinsk	Strategy of Development of Chelyabinsk until 2020

The data cover all Russian million-plus cities, except for Ufa, whose strategy has not been approved yet and, therefore, has not been made publicly available.

Strategies of Russian million-plus cities can be divided into three groups: strategies approved for the period until 2020 (Voronezh, Krasnoyarsk, Novosibirsk, and Chelyabinsk); until 2030 (Volgograd, Kazan, Perm, and Ekaterinburg); and until 2025 or another period (Omsk, Rostov-on-Don and Samara (until 2025) and Nizhny Novgorod (2017–2022)).

First group. The priorities of socio-economic development in *Voronezh* are defined as follows: "development of the human potential and creation of supportive and healthy urban environment; formation of efficient urban agglomeration; innovative development of the city's economy and its integration into the Russian and international economy"[5].

[3] *On Strategic Planning in the Russian Federation: Federal Law of June 28, 2014 No. 172-ФЗ*. Retrieved from http://www.kremlin.ru/acts/bank/38630

[4] In this paper, the terms strategic planning document, strategic plan and strategy are used interchangeably.

[5] *On the Approval of the Strategic Plan of Socio-Economic Development of the Municipality of Voronezh until 2020: Decree of Voronezh City Duma of July 14, 2010 No. 147-III (version of December 20, 2017 No. 740-IV)*. Retrieved from http://www.voronezh-city.ru/administration/structure/detail/10763

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For each priority area the document defines the matters which fall within the responsibility of local authorities. For the third priority area their responsibilities were described the following way: "enhance formation and development of new knowledge-intensive industries and boost their competitiveness on Russian and world markets; stimulate manufacturing output and ensure growth in the share of innovative products; maximize growth in the number of small innovative businesses and their share in the economy of the city and the region; participate in the processes of clusterization of the city's socio-economic space; create a favourable investment climate; catalyze integration of the city into the socio-economic space of the country and the world educational, scientific and informational space; enhance modernization of the existing large industrial enterprises, their competitiveness and efficiency; ensure energy efficiency and energy saving in all spheres of the city's economy; and assist in establishing zones of innovative development within the city area (and suburban areas of the region's municipalities)"[6].

Local authorities are also expected to contribute to the creation and development of special zones, technoparks and clusters, which are seen as crucial for innovative socio-economic development. As the Strategy points out, "...participation of local authorities in clusterization of the city's socio-economic space will contribute to its economic and social growth and provide more opportunities for integration of manufacturing, educational, and research organizations into the national and global space"[7].

In its strategic documents, *Krasnoyarsk*[8] is described as a site with a multi-sectoral manufacturing industry and abundant production facilities, which makes it suitable for promoting and enhancing technical innovation. The strategic priorities of its development correspond to those of Krasnoyarsk region, Siberia and Russia in general.

The Strategic Plan of Novosibirsk states that "it is possible to achieve a stable improvement in the standards of living of all groups of city residents by raising economic prosperity, enhancing the educational, cultural and spiritual potential, ensuring public safety and raising the quality of the urban environment"[9].

According to the innovative scenario underlying the Strategy of *Chelyabinsk*, the city is going to acquire a new status of modern metropolis with the corresponding look, infrastructure, level of services and standards of living. The Strategy sets a three-level task for ensuring the city's technological development: "transition from the import of technologies to adoption of technologies and independent creation of new technologies"[10].

For sustainable development of Chelyabinsk as an industrial, scientific, cultural and sport centre with high standards of living, it is essential to focus on qualitative changes in each of the key spheres. By enhancing its economic performance, Chelyabinsk is expected to secure itself a favourable position in the global division of labour, which would contribute to its development in the nearest decades.

Second group. The Strategy of *Volgograd* includes four priorities: "development of the human capital: city residents need high-quality services in health care, education, culture, and intellectual development as the quality of these services will determine who will be living and working in Volgograd in the future; development of innovation-driven economy: to enhance the potential of the city's economy it is vital to create favourable conditions for business (management, infrastructure, investment and entrepreneurial climate); improvement of the urban environment (public amenities, utilities and transport, affordable housing, making the city more disabled-accessible), which will determine residents' overall satisfaction with their city as a place suitable for life and work; and, finally, development of local self-government as a key to high quality city management by making it more efficient and open for interactions with people and business, building a civil society and creating a single information space"[11].

[6] *On the Approval of the Strategic Plan of Socio-Economic Development of the Municipality of Voronezh until 2020: Decree of Voronezh City Duma of July 14, 2010 No. 147-III (version of December 20, 2017 No. 740-IV)*. Retrieved from http://www.voronezh-city.ru/administration/structure/detail/10763

[7] Ibid.

[8] *On the Approval of the Program of Socio-Economic Development of Krasnoyarsk until 2020: Decree of Krasnoyarsk City Council of Deputies of October 13, 2011 No. B-267*. Retrieved from http://www.admkrsk.ru/citytoday/economics/social_situation/Pages/developmentprogram.aspx

[9] *On the Approval of the Strategic Plan for Sustainable Development of Novosibirsk: Decree of the City Council of March 28, 2005 No. 575*. Retrieved from http://novo-sibirsk.ru/to-citizens/economy/strategy/

[10] *On the Approval of the Strategy of Development of Chelyabinsk until 2020: Decree of Chelyabinsk City Duma of November 26, 2009 No. 8/1*. Retrieved from http://chelduma.ru/reshenie-chelyabinskoy-gorodskoy-dumy-chetvertogo-sozyva-ot-26112009-g-no-81-o-strategii-razvitiya

[11] *On the Approval of the Strategy of Socio-Economic Development of Volgograd until 2030: Decree of Volgograd City Duma of January 25, 2017 No. 53/1539*. Retrieved from http://www.volgadmin.ru/d/strategy2030/index

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In *Kazan*[12], the choice of priorities relies on several groups of criteria, including advanced world practices and modern theories and concepts such as the *green city*, *resilient city*, *global city*, and a *smart city*. The Strategy of Kazan focuses on three interconnected priority areas: "formation and accumulation of the human capital; creation of comfortable space to develop the human capital; and creation of economic relations and social institutions that would ensure demand for the human capital in the city's economy and enhance the performance of the human capital"[13].

In *Perm*, the strategic goals and objectives are grouped according to the following functional areas: "social sphere; public security; economic development; development of infrastructure; spatial development; and development of the municipal administration system"[14]. It is planned to ensure *economic development* by "diversifying the economy, which is based on dynamic innovative sectors, and by creating conditions for knowledge-driven economy and transition to the sixth technological mode"[15].

One of the key strategic areas for the development of *Ekaterinburg* is turning the city into "an interregional innovation-oriented industrial and financial centre". This priority area thus focuses on "creating the largest interregional centre of 'new economy', capable of participating in global economic processes by enhancing the competitiveness of the city's financial and industrial complex and by creating favourable conditions for sustainable development of innovation-driven business and investment"[16].

This priority area includes the following strategic goals: "to establish a production centre to maximize the efficiency and innovation potential of the city's industrial complex and to create conditions for accelerated development of new technological niches and production service; to create an interregional centre for attracting financial and investment resources and thus improve business, institutional and infrastructural conditions for innovative economic development, to enhance the efficiency of business investment and to establish the largest regional decision-making centre; to develop sectors of digital economy and facilitate cooperation between administration, business and the public; to provide efficient information and communications services and the corresponding infrastructural, institutional, technological and human resources"[17].

Third group. The Strategy of *Omsk* prioritizes knowledge-intensive industries. The role of the city administration is described the following way: "to create federal and regional centres of knowledge-intensive mechanical engineering through cooperation between the city administration and industrial enterprises; to facilitate cooperation between the participants of the comprehensive program *Innovative Transport for Remote Regions of the Far North, Siberia, and the Far East* (*Innovative Transport of the North*) and to assist in the selection of projects within the program; to facilitate cooperation between the participants of the roadmap of the project *Expanded Use of High-Technology Products of Knowledge-Intensive Organizations of Omsk Region, Including Import-Substituting Products in the Interests of OAO Gazprom* and to assist in the selection of projects; to provide enterprises with organizational and financial support and thus develop renewable energy sources such as solar power engineering and new principles of energy generation; to provide organizational and financial support for the implementation of the project to establish a manufacturing and logistics complex; to provide financial support to small and medium entrepreneurship projects engaged in development of advanced types of production, technologies or services"[18].

The main aim outlined in the Strategy of *Rostov-on-Don* is "to ensure the city's transition to innovation-driven economy, advanced sphere of social services to meet residents" needs in professional and creative self-realization, healthy lifestyle and spiritual development. The Strategy seeks to guide the city's development as one of the leading scientific, educational, cultural, financial,

[12] *On the Approval of the Strategy of Socio-Economic Development of the Municipality of Kazan until 2030: Decree of Kazan City Duma of December 14, 2016 No. 2-12*. Retrieved from https://www.kzn.ru/o-kazani/strategiya-kazani-2030/

[13] Ibid.

[14] *On the Approval of the Strategy of Socio-Economic Development of the Municipality of Perm until 2030: Decree of Perm City Duma of April 22, 2014 No. 85*. Retrieved from http://www.gorodperm.ru/actions/strategy/conception_development/

[15] Ibid.

[16] *On Amendment of the Decree of Ekaterinburg City Duma of June 10, 2003 No. 40/6 "On the Strategic Plan of Ekaterinburg: Decree of Ekaterinburg City Duma of May 25, 2018 № 12/81"*. Retrieved from http://www.egd.ru/docs/acts/_aview_b6848

[17] *On Amendment of the Decree of Ekaterinburg City Duma of June 10, 2003 No. 40/6 "On the Strategic Plan of Ekaterinburg: Decree of Ekaterinburg City Duma of May 25, 2018 № 12/81"*. Retrieved from http://www.egd.ru/docs/acts/_aview_b6848

[18] *On the Approval of the Strategy of Socio-Economic Development of Omsk until 2025: Decree of the Administration of Omsk City of July 9, 2014 No. 938-n*. Retrieved from http://admomsk.ru/web/guest/progress/socioeconomic

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economic, and transportation centres of federal significance, as the capital of sourthern Russia"[19]. To fulfil this vision, for the period until 2025, it is planned to pursue three strategic goals, one of which is the "formation of innovative and efficient economy, open to the world and attractive for investment"[20]. This goal includes the following strategic priorities: "development of Rostov-on-Don as an innovative technological, research and education centre of federal and international significance; Rostov-on-Don as an international economic centre: the city open to the world; Rostov-on-Don as the leading trade centre and transport hub of southern Russia; Rostov-on-Don as an interregional financial and economic centre; development and realization of the potential of local businesses"[21].

The Strategy of *Samara* focuses on the following areas: "innovative and technological development of the manufacturing industry; enhanced development of business environment and entrepreneurship; accelerated development of communications; development of transport and logistics; development of tourism and recreation industry; sustainable urban development; spatial development and formation of creative urban environment; development of local communities; cultural development; and development of education"[22].

The key area of industrial policy in Samara is "the city's transition to high technologies, which would provide competitive, sustainable and resource-efficient module-based production and transition to development and transfer of commercially successful technologies for the global market" [23].

In the Strategy of Nizhny Novgorod, the goal Economic Development comprises four strategic areas: "development of investment potential; development of the cluster policy; retaining and developing the workforce; and development of entrepreneurship and competitive environment"[24].

Our study of strategic priorities and indicators of socio-economic development of large Russian cities has shown the following: firstly, the results achieved within each priority area should contribute to the attainment of more general goals of socio-economic development. It should be noted that the main aim of any such strategy is to raise the standards of life in the city. Thus, the complex of priority areas must ensure the development of the city's human potential and economy. Depending on their significance, these specializations and priorities can be divided into separate groups such as engineering, transport and social infrastructure, environmental sustainability, public amenities and so on. Secondly, strategic planning should take into consideration priorities, projects and programs realized on the federal and regional levels (macro-levels) but also the interests of the areas surrounding the city in question.

Conclusion

Strategic planning and management are the main tools in organizing cooperation between the authorities and other groups of stakeholders, thus enabling them to work together towards common goals. Our analysis has led us to the following conclusions:

1. In Russia, the key strategic planning documents (strategies, strategic plans and so on) first started to be designed in large cities and underwent certain transformations due to the changes in stakeholders' interests and the objective processes in the country's development (economy, politics, and so on). Some of these documents have been updated while others are still used in their original versions.

2. We have analyzed the priorities in strategic development of Russian million-plus cities described in the corresponding documents. Large cities are the driving force behind Russia's economic development, which means that careful strategic planning and conscientious management are able to ensure high rates of their development.

3. We found that one of the main mistakes that is made while designing or updating strategies is to focus only on those processes and phenomena that fall within the jurisdiction of local authorities and

[19] *On the Approval of the Key Areas of the Strategy of Socio-Economic Development of Rostov-on-Don until 2025: Decree of Rostov-on-Don City Duma of December 18, 2012 No. 372.* Retrieved from http://rostov-gorod.ru/upload/uf/9e5/9e5a8e-9cd32821e9aba6d0605e7d96a5.doc

[20] Ibid.

[21] Ibid.

[22] *On the Approval of the Strategy of Comprehensive Development of the Municipality of Samara until 2025On the Approval of the Strategic Plan of Socio-Economic Development of the Municipality of Voronezh until 2025: Decree of the Duma of the Municipality of Samara of September 26, 2013 No. 358.* Retrieved from http://samgd.ru/upload/mirrors/www.gordumasamara.ru/docs/decisions/1380139200/Strategiya_ot_26.09.13.pdf

[23] Ibid.

[24] *On the Approval of the Strategy of Socio-Economic Development of Nizhny Novgorod for 2017-2022 Decree of the City Administration of January 25, 2017 No. 190.* Retrieved from http://нижнийновгород.рф/gorod/biznes/strategicheskoe-planirovanie/dokumenti-strategicheskogo-planirovaniya/strategiya-sotsialno-ekonomicheskogo-razvitiya-goroda-nizhne/

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have local significance. Such approach generates infeasible strategies. Instead, a strategy should imply consolidated efforts of all groups of stakeholders regardless of their power, competences and so on and should cover all the processes on the city's territory.

Thus, a general revision of the methodical approaches to strategizing is required, which will allow the country's government to create a unified system of strategic planning and management applicable for all levels of territories.

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Younger vs. older workers in ASEAN countries: substitutes or complements?

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ABSTRACT
The phenomenon of population ageing has led the countries of ASEAN (Association of Southeast Asian Nations) to face challenges in the sphere of employment since older workers are considered likely to prevent younger workers from entering the labor market. This paper seeks to describe the effect that an increase in the number of older workers has on the number of young workers. The study relies on the data provided by the International Labour Organization for the period between 2010 and 2016 and the OLS and 2SLS regression analysis methods. The results show that older workers do not impede the career progress of younger workers, in other work, that these two groups of workers are complements rather than substitutes for each other. Nevertheless, the phenomenon of population ageing should be an important concern for the governments of ASEAN countries because of the effect of this trend on the labour market. The fact that almost a half of the elderly population in ASEAN is still actively working indicates that the elderly suffer from the consequences of the economic downturn and still do not feel financially secure enough to retire. Thus, the role of the government in the current conditions is to create a suitable job market to accommodate elderly workers.

KEYWORDS
population ageing, ASEAN, older workers, employment, labor market

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Молодые и возрастные работники в странах АСЕАН: субституты или комплементарии?

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АННОТАЦИЯ
Феномен старения населения привел к тому, что страны АСЕАН (Ассоциация государств Юго-Восточной Азии) столкнулись с проблемами в сфере занятости, поскольку считается, что пожилые работники могут препятствовать выходу молодых работников на рынок труда. Эта статья нацелена на описание влияния увеличения числа пожилых работников на число молодых работников. Исследование опирается на данные, предоставленные Международной организацией труда за период с 2010 по 2016 г., а также методы регрессионного анализа OLS и 2SLS. Результаты показывают, что пожилые работники не препятствуют карьерному росту молодых работников на других работах, что эти две группы работников являются комплементариями, а не заменителями друг другу. Тем не менее, явление старения населения должно вызывать серьезную обеспокоенность у правительств стран АСЕАН из-за влияния этой тенденции на рынок труда. Тот факт, что почти половина пожилого населения в АСЕАН все еще активно работает, указывает на то, что пожилые люди страдают от последствий экономического спада и все еще не чувствуют себя в достаточной финансовой безопасности, чтобы выйти на пенсию. Таким образом, роль правительства в современных условиях заключается в создании подходящего рынка труда для размещения пожилых работников.

КЛЮЧЕВЫЕ СЛОВА
старение населения, АСЕАН, пожилые работники, трудоустройство, рынок труда

ДЛЯ ЦИТИРОВАНИЯ
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Introduction

The population age structure in ASEAN is rapidly changing: the World Population data show that the population of ASEAN increased at the rate of 0.85% per annum or 633 million people in 2015 and this rate is expected to grow and reach 717 million in 2030 and 741 million people in 2035. In two decades, the proportion of the aging population is predicted to double: from 7.73% in 2015 to 15.49% in 2035 (ASEAN Population Forecast, 2013). Singapore and Thailand have the largest proportion of aging population – 31.74% and 23.39% respectively[1]. This phenomenon is explained by improved health care and enhanced life expectancy of the population. According to the World Bank (2015), between 2000 and 2015, life expectancy in ASEAN rose by 4.2%. Singapore is at the top of the list with a life expectancy of around 82 years (increase by 4.8%) and the Philippines, at the bottom, with life expectancy of 69 years (2.89%). Increasing life expectancy has led to an increase in the older age population or population ageing.

Population aging is a challenge for the future as it requires the humanity to ensure sustainable development, which is described in the UN's Sustainable Development Goals (SDGs), in particular Goal 8, promoting full and productive employment and decent work for all (SDG 8). The employed aging population or elderly workers will have an impact on employment opportunities, especially among young workers. This phenomenon is described in the SDGs Report 2018, which indicated that youth were three times more likely to be unemployed than adults in 2017[2].

People continue to work even after reaching their retirement age to ensure the stable income of their households. Munnell & Sass [1] and Johnson & Mommaerts [2] argue that working longer has become for many people the best way to increase their retirement incomes, which decreases the chances of young people to reach the top of their career ladders and significantly influences their lifetime earnings and upward mobility. This phenomenon is known as lump of labor. In this paper, we are going to discuss it in more detail focusing on the case of ASEAN countries. The structure of this paper is as follows: it comprises an introduction, literature review, description of the data used and research methodology, discussion of results, and a conclusion.

Literature Review

"Lump of labor" theory

The "lump of labor" theory deals with the relation between younger and older workers, who can act either as substitutes for each other or as complements [3–5]. If there is a certain number of jobs in the labour market and the majority of these jobs are occupied by the non-retiring elderly, this means that fewer jobs are accessible for the young and that the rates of unemployment among the young should grow (substitutes). On the other hand, if the number of jobs in the labour market

[1] *ASEAN+6 Population Forecast: Global Share, Aging and Dependency Ratio*. Retrieved from http://www.asean2013.gov.bn/images/aseanpopuforecast.pdf

[2] *The Sustainable Development Goals Report*. Retrieved from https://unstats.un.org/sdgs/report/2018/overview/

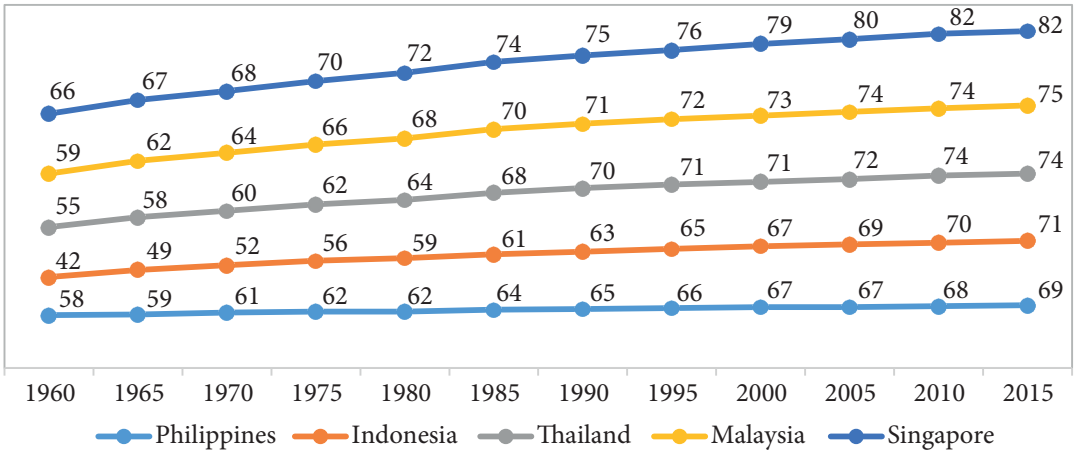

Figure 1. *Life Expectancy*

Sourse: Life expectancy at birth, total (years).
Retrieved from https://data.worldbank.org/indicator/SP.DYN.LE00.IN

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can adjust to the labour supply and if the elderly can share their experience with the young, it means that they will be able to improve their work performance (complements). This view is widely spread in developed countries such as the USA and European countries. The "lump of labor" theory has been reviewed many times and used as a reason for promoting early retirement programs.

It is often argued that the labor market is dynamic and there is no limitation to the number of jobs in an economy [3; 5–7]. Due to rapid technological progress and market growth, production of new goods and services and the increasing national income [3–5] can generate more employment opportunities to adjust labor force changes in an economy. These factors can affect the employment situation, including the balance between older and younger workers. According to Schleife [8], there is a skill gap between older and younger workers, with the former struggling to keep up with the latter in adopting and using new technologies. Moreover, older workers have less time to benefit from the returns to their training investment. Nevertheless, the empirical study conducted by Jin [5] in the USA brought little evidence of trade-offs in the employment of older and younger workers.

Ageing and education

In modern conditions, with higher labor costs and an increase in the retirement age, many firms might choose to substitute younger workers for older workers. Freeman [9], Walker [10] and Böheim [7] believe that the decision to substitute one type of workers for another is usually based on the equality of their skill and competence levels. Nevertheless, the available empirical evidence shows that workers with equal skills and the five-year age difference are imperfect substitutes. Thus, different substitution rates between workers from different levels of education can negate the negative consequences of delaying the retirement age [3; 5; 7]. For example, young workers with a high school level of education may be easily replaced by older workers with a similar level of education because older workers are more experienced. Experienced workers are often considered as better investment for firms and firms are more likely to put greater effort in retaining them. Therefore, firms may be not that willing to replace older workers with younger ones, although the cost of hiring older workers increases significantly. The substitution could occur, however, if it correlated with the technological development.

The technological revolution requires higher-level skills, even though many jobs can be done more efficiently by computers. However, learning new skills is expensive and older workers may not invest in acquiring new skills if the remainder of their work is too short to cover costs [5]. On the other hand, younger workers will learn new skills more easily because their period of work is longer and thus enables them to recover the costs incurred [7].

Research Methodology

This study uses the data from the annual Key Indicators of the Labour Market (KILM) of the International Labour Organization (ILO). The analysis focuses on five ASEAN countries in terms of the labor force activity of both old and young people in the period 2010–2016. In the studies conducted by Gruber & Milligan [6], Munnell and Wu [3], Jin [5], the sample is divided into two age groups: 15–24 (the "young") and 55 and above (the "elderly"). Afterwards, several variables with OLS are examined to find out the ratio of older to younger workers:

$$Y_{st} = \beta_0 + \beta_1 Olderemp_{st} + X_{st}\beta_2 + \varepsilon_{st}. \quad (1)$$

The dependent variable, Y_{st}, is the youth employment rate in each state and each year. The independent variable is the elderly employment rate in each state and each year ($Olderemp_{st}$) . The X_{st} are explanatory variables, such as gender, dependency ratio, and education level.

The previous methodology still raises questions due to the undiscovered causality relationship. According to Gruber & Milligan [6], Jin [5], the instrumental variable approach or 2SLS can be one way to solve the problem. The aim is to identify instrumental variables that 1) correlate with the work of older workers; and 2) have no direct impact on young workers. The mortality rate meets both criteria. The next step is to estimate the 2SLS model after the instrument is constructed. The first stage (2) estimates the effect of mortality rates on elderly workers ($Olderemp_{st}$):

$$Olderemp_{st} = a_0 + \beta_1 \widehat{MR}_{st} + X_{st}\beta_2 + \varepsilon_{st}. \quad (2)$$

The next step (3) replaces the predicted value of elderly workers ($\widehat{Olderemp_{st}}$) from the first stage (2) for the actual work of elderly workers:

$$Y_{st} = \beta_0 + \beta_1 \widehat{Olderemp_{st}} + X_{st}\beta_2 + \varepsilon_{st}. \quad (3)$$

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Results and Discussion

ASEAN labour force

As Figure 2 shows, in ASEAN, the labour force aged 65 and above has been growing rapidly, although there was a decrease in 2013. There have also been some fluctuations in the labor force aged 55–64, which in 2014 increased by 0.43% and in 2015 decreased by 1.7%. However, compared to the decline in the young labor force, the situation with the old labor force is better. The decline in the number of young workers since 2011–2015 has been 2.04%. Thus, it may be concluded that ASEAN countries are now going through a demographic transition, which supports the prediction made by Aris Ananta [11], who also maintained that this transition will affect economy and politics in ASEAN.

Elderly population is a vulnerable group because they suffer more than other age groups from the consequences of the economic downturn [12]. Due to the downturn in the economy, these people are forced out of the labour market and have to rely on their savings or the earners in their households [13]. These factors determine such trends as active aging. Looking at Figure 1, we see the growth in the number of older workers indicated. The word 'active' here refers to he ongoing involvement of the elderly into various activities ranging from social, economic and cultural to sport and routine activities of daily living [14; 15]. Therefore, active aging is a broad and complex idea that plays a significant role in the global strategy for managing aging populations [6; 15]. HR strategies of many companies place greater emphasis on older workers. This trend may be associated with such phenomena as an encore career, a decrease in economic welfare or the need to accommodate the so-called "boomerang kids" [2; 17].

As Figure 3 demonstrates, the proportion of people aged 55 and over in the employment growth decreased by 3.22 % in 2011, then it rose by

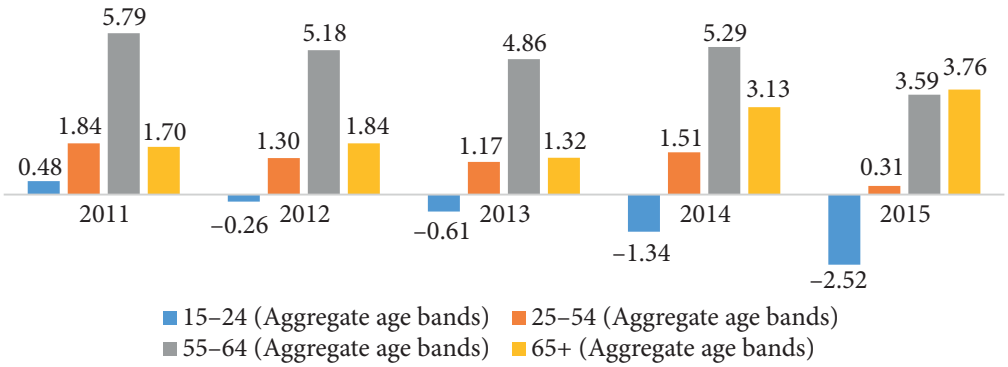

Figure 2. *ASEAN Labor Force Growth*

Sourse: Key Indicators of the Labour Market. Retrieved from https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=1678824381434283&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D1678824381434283%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dd5dq2kvxh_4ILO

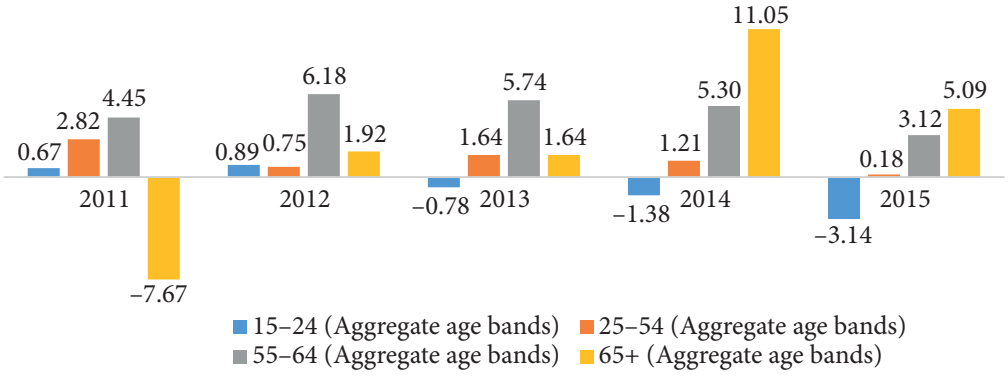

Figure 3. *ASEAN Employment Growth 2011–2015*

Sourse: Key Indicators of the Labour Market. Retrieved from https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=1678824381434283&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D1678824381434283%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dd5dq2kvxh_4ILO

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	2011	2012	2013	2014	2015
15–24 (Aggregate age bands)	–1.16	–11.84	1.11	–0.91	3.20
25–54 (Aggregate age bands)	–109.53	39.75	–48.02	25.42	9.98
55–64 (Aggregate age bands)	45.89	–39.56	–63.33	4.41	29.90
65+ (Aggregate age bands)	82.46	1.14	–1.52	–378.21	–192.50

Figure 4. *ASEAN Unemployment Growth 2011–2015*

Sourse: Key Indicators of the Labour Market. Retrieved from https://www.ilo.org/ilostat/faces/wcnav_defaultSelection?_afrLoop=1678824381434283&_afrWindowMode=0&_afrWindowId=null#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D1678824381434283%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dd5dq2kvxh_4ILO

16.35 % in 2014 and fell by almost a half – 8.14%. This proves that active ageing is a major tren in ASEAN countries. Whatever the reasons, elderly workers are more prone to continuing working and thus competing with younger workers on the labour market.

As Nasir et al. [13] pointed out, in the early twenty-first century, the old age dependency ratio in developed and developing countries is increasing rapidly. Japan, Singapore, and several industrial countries have demonstrated a rise in the average and older age of employed population [11; 13; 18], which leads to the growth in unemployment. As we can see from Figure 4, the number of young and economically active people has fallen while unemployment has risen since 2011. On the other hand, there has been a growth in the working population aged 25–54 and those aged 55 and over, which has affected unemployment. This means that older workers are more likely to compete with young workers. However, another reason for the rise in youth unemployment is that some part of the younger population are still studying or are looking for jobs in the informal sector.

Older workers vs. younger workers relationship

As Table 1 shows, the coefficient of determination young workers terms model is 0.885. This means that 88.5% of the variation in the quantity of young workers can be explained by the two variables, while 11.5% of the variation in the quantity of young workers is explained by the residual. The independent variables used in the estimates have a significant simultaneous effect on the quantity of young workers in ASEAN. The condition can be known through F-sig, which is worth 0.00.

Such variables as older workers' employment, older workers' unemployment, education level and dependency rate have a significant positive correlation with young workers through t-statistic probability value with a level of significance less than 1% or 5%. A 1% increase in the employment of older workers will increase the quantity of young workers by 0.641%. A 1% increase in the unemployment of older workers will decrease the quantity of young workers by 0.236%. A 1% increase in the education level will increase the quantity of young workers by 0.518%. Futhermore, a 1% increase in the dependency rate will increase the quantity of young workers by 0.368%. Otherwise, the gender variable has an insignificant positive correlation with the number of young workers through t-statistic probability value having the insignificance level of more than 5% or 10%.

Table 1 shows that older workers have a significant impact on young workers in five ASEAN countries. Older workers are the key independent variable that has a positive influence on young workers, which means that an increase in the number of older workers leads to an increase in the number of younger ones. Thus, older workers do not prevent young workers from entering the labor market in ASEAN countries. We have remodeled this situation by supposing that an endogenous variable could be affecting older or young workers, but this did not significantly influence the result, which is consistent with the earlier equation that older workers do not adversely affect job opportunities of the young. Thus, our

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findings correspond to the results of the previous research [3; 5; 6], which has failed to find any evidence that there is substitution between younger and older workers.

Table 1

Employment of older and younger workers

Independent Variable	Dependent Variable: Youth employment	
	OLS	*2SLS*
Older workers' employment	0.641*** (0.043)	0.867*** (0.085)
Older workers' unemployment	–0.236*** (0.048)	–0.268*** (0.056)
Gender	–0.032 (0.118)	–0.004 (0.138)
Education	0.480*** (0.596)	0.500*** (0.083)
Dependency rate	0.368*** (0.072)	0.270*** (0.801)
R Squared	0.885	0.837
Adjusted R Squared	0.883	0.833
Prob. (F Statistic)	0.000	0.000
Durbin Watson Stat	0.624	

Source: data calculation
Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Supporting previous research such as Schleife [5], Munnell & Wu [3], Boheim [7], Jin [5] and many others finding that education or human capital is very important for the uptake of developing technology and productivity of firms. This study shows that level of education has an impact on deciding hiring worker and consider how investment in the aspect of human capital will benefit to improve firm performance. So, hiring a young worker with high education level more valuable than the older worker to improving the productivity of the firm. Nevertheless, employers could decide to hire older worker caused older workers to have less absenteeism, less turnover, superior interpersonal, to make rapid decisions while working, dependability, and greater accuracy and a bunch of experiences [12; 19; 20]. These abilities can benefit fully for the employers to hire them in case to increase productivity for companies.

As Table 1 demonstrates, unemployment among older workers has a significant negative relation with the number of younger workers while the dependency rate, on the contrary, has a significant positive relation. This can be explained by the fact that traditionally, in ASEAN countries, the welfare and socio-economic needs of the elderly remain the responsibility of their children, especially their sons. In addition, the distribution of intra-home resources is also complex, especially in the case of "boomerang kids".

Conclusion

In this study we explore the impact of elderly workers on the job opportunities of younger workers in five ASEAN countries. As we know, population aging is caused by the declining fertility rates and the increasing life expectancy. In ASEAN, the chances of young workers are affected by the number of older workers, but also by the young workers' education level and dependency ratio variables. They have a significant and positive relation (except for the unemployment variable) to the variables related to young workers, both simultaneously and partially. Secondly, we found that there is an inverse relationships between the number of young workers and the unemployment of older workers.

However, more research is required into this problem: it is necessary to expand the range of indicators and involve more data on ASEAN to provide us with a more in-depth understanding of the employment and unemployment trends among younger and older workers in these countries. Moreover, in addition to the factors discussed in this study, we should consider other factors that contribute to active aging, such as wages, working hours, and productivity in each age group.

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Potential of geotourism for regional development: the case of "Iron Gates" park in Serbia

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ABSTRACT
This paper focuses on the case of "Iron Gates" National Park located along the Danube between Serbia and Romania and discusses the opportunities and prospects for developing geotourism. Apart from being an area of natural beauty, this park comprises a wide range of spectacular geological sites, historical and cultural monuments. The authors also examine the concept of geotourism and show its connection to other types of tourism such as nature tourism and adventure tourism. Using statistical methods and methods of comparative analysis, they analyse the data on tourism development in Đerdap (Serbia) and Mehedinţi County (Romania) in 2015. Such indicators as the number of tourists and overnight stays, the number of accommodation facilities, the coefficient of functionality, and so on are considered. The conclusion is made that the national park "Iron Gates" holds significant potential for the development of sustainable tourism in the region if the park's geoheritage sites are consolidated into a single tourism route "Iron Gates Geoheritage", which would be highly likely to become a successful product in the tourism market. This product could be presented either directly, as a tourist destination, or indirectly, through event tourism, excursions, transit tourism and so on, and offered to both domestic and international tourists.

KEYWORDS
geotourism, sustainable regional development, "Iron Gates" National Park, sustainable tourism, Serbia, Romania

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Потенциал геотуризма в качестве драйвера регионального развития: случай сербского парка «Железные врата»

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АННОТАЦИЯ
Эта статья посвящена национальному парку «Железные врата», расположенному вдоль Дуная между Сербией и Румынией, и в ней рассмотрены возможности и перспективы развития геотуризма. Помимо того, что район парка отличается природной красотой, он включает в себя широкий спектр впечатляющих геологических, исторических и культурных памятников. Авторы рассматривают понятие геотуризма и показывают его связь с другими видами туризма, такими как природный туризм и приключенческий туризм. Используя статистические методы и методы сравнительного анализа, они анализируют данные о развитии туризма в Чердапе (Сербия) и округе Мехединцы (Румыния) в 2015 г. Рассмотрены такие показатели, как количество туристов, ночевок, количество объектов размещения, коэффициент функциональности. Сделан вывод о том, что национальный парк «Железные врата» обладает значительным потенциалом для развития туризма в регионе, который будет реализован, если объекты геонаследия парка будут объединены в единый туристический маршрут «Географическое наследие Железных врат». Данный продукт с большой вероятностью станет успешным на туристическом рынке. Этот продукт может быть представлен либо напрямую, как туристическое направление, либо косвенно, посредством событийного туризма, экскурсий, транзитного туризма и т. д., и он может предлагаться как внутренним, так и международным туристам.

КЛЮЧЕВЫЕ СЛОВА
геотуризм, устойчивое региональное развитие, Национальный парк «Железные врата», устойчивый туризм, Сербия, Румыния

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Introduction

Before the 1980s, mass industrial tourism was a prevalent concept and the development of tourism was seen in terms of such economic indicators as profit and employment rates or gross national product. However, this approach had a negative effect on the environment and society. Such adverse impacts, in turn, were detrimental to the quality of tourism product resulting in a fall in the demand for destinations in which tourism caused environmental damage, was destructive to host communities and their cultures. Consequently, the idea of new, alternative tourism emerged, which boosted interest in sustainable products and sustainable development in all types of tourism [1].

Geotourism is tourism which aims to sustain or enhance natural environment and its geodiversity. It is a highly specialized type of tourism focused on geostructures (landscapes, reliefs, profiles, fossils and so on) and as such it is related to nature tourism and ecotourism [2–4]. Geotourists are usually interested in such activities as looking for fossils and interesting relief forms, going on tours and following theme trails. While visiting tour sites, tourists are informed by expert guides about the processes which result in the formation of geostructures. As a result, tourists will know more about the environment and the character of individual structures and processes. Thus, the concept of geotourism is to some extent similar to ecotourism and it can be considered desirable only if it encourages tourists and locals to treat the environment with respect. Geotourism can be based on both cultural and historical monuments if structures which are visited were built from local rocks. Geotours may also present the mining industry of the region so that tourists can see how geology influenced peoples' lives as well as negative effects that human activities had on the environment [5–7]. Geotours are usually rounded off with services offered at geoparks, at which geological heritage is protected and promoted through sustainable use of resources [8; 9].

At the same time, the value of geodiversity can be attractive for those tourists who are interested in adventure activities such as mountaineering, amateur caving or trekking. Moreover, there are some elements of geodiversity that are essential for recreation, for instance, skiing, rafting, hiking or climbing. Thus, the relation between ecotourism and nature tourism can be compared to the one between geotourism and adventure tourism. There are also activities that are more focused on enhancing tourists' understanding of the environment and improving the environment (ecotourism and geotourism), whereas in other cases tourists seek enjoyment, recreation and adventure (nature tourism and adventure tourism based on geodiversity).

To ensure sustainability in tourism, an integrated approach to planning and management is required. Any planning should be long-term and proactive, and plans should be integral to or in harmony with other ways of using the area. Finally, all plans must correspond to the needs of the host community. As for management, it should be comprehensive and in line with the industry sectors and activities relevant to the area; projected outcomes should be clearly stated and responsibilities, delegated. This understanding of planning and management is aimed at protecting the environment and ensuring sustainable use of natural resources. With a few adjustments and amendments, it can be applied to develop geotourist destinations [8–11].

Geographical Location and Characteristics of "Iron Gates" Park

The name "Iron Gates", or "Đerdap" in Serbian, denotes not only a gorge formed by the Danube making its way through the Southern Carpathians and connecting the Pannonian and Lower Danube Basins. It is also the name of the national park established in 1974. The park is located in the north-east of Serbia, in South-East Europe. Stretching along Serbia's border with Romania, the park lies in the territory of three municipalities: Golubac, Majdanpek and Kladovo. The "Iron Gates" park comprises four gorges separated by three valleys. The gorges alternate with the valleys in the following order from the west to the east: the Golubac Gorge, the Valley of Liubcova, the Lady's Eddy Gorge ("Gospođin vir"), the Valley of Donji Milanovac, the Kazani Gorge, the Oršava Valley and the Sipska Gorge. Main orographic features include the Golubac Mountains, Šomrda, Liškovac, Veliki Greben and Miroč. The valleys are formed by the Danube tributaries that run through the mountains and also feature a number of barren karst plateaus. A water reservoir belonging to the "Đerdap I Hydropower and Navigation System" was formed when a dam was constructed to hold back the Danube and raise its level. Since then, the reservoir has had a considerable impact on

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the environment, for instance, the weather conditions. The mean annual temperature (the village of Tekija – 11.4 °C) and precipitation values (the village of Tekija – 801.9 mm) in this area have been somewhat higher than the respective values in Serbia. In turn, the improvement of weather conditions has had a positive effect on the region's flora [12].

As for the demographic trends in the area, the entire territory has experienced depopulation since mortality and emigration rates exceed natality and immigration rates. Three major towns of the region are Golubac, Donji Milanovac and Kladovo. The main branches of industry include hydropower engineering ("Đerdap I" and "Đerdap II" Hydroelectric Power Plants), transportation (the Danube Pan-European Corridor VII), tourism, agriculture, fishing and fisheries, forestry, stone extraction in the village of Brnjica and copper mining in Majdanpek [13–16].

Methodology

This paper uses statistical methods to determine the number of visitors and overnight stays in Đerdap in Serbia and Mehedinţi County in Romania in 2015 as well as the number of accommodation facilities, the length of stay of tourists, coefficient of functionality, capacity utilization and intensity of functionality in Đerdap and the cross-border region of Mehedinţi. These data are then used in comparative analysis of tourism development in these regions.

The analysis focuses on four indicators: the length of stay of tourists, functionality coefficient, capacity utilization and intensity of functionality. The length of stay is calculated as the ratio of the number of nights to the number of tourists. The coefficient of functionality is the ratio of the number of beds to the number of guests; capacity utilization, the ratio of the number of nights to the number of beds during the year; and the intensity of functionality shows the amount of tourist traffic in the given location within a certain period.

Geotourism in "Iron Gates" Park

In addition to geodiversity and biodiversity (shown in Table 1 and 2 respectively) and cultural and historical heritage (Table 3), the "Iron Gates" park can attract visitors by its natural history exhibition displayed in the Visitor Centre, museums, hiking trails (see Table 4), cycling routes, leisure centres and a variety of popular events.

Out of the 651 geoheritage sites identified in Serbia, 26 are located in the "Iron Gates" area, which means that the park has vast potential for consolidating these sites into a single route that could be popular on the tourism market. Geoheritage sites could complement the tourism offer that is already available in this Serbian region [11].

Fourteen sites located in "Iron Gates" have been protected by the state as nature reserves and special nature reserves. In addition, seventeen cultural and historical monuments found in the territory have been placed under protection of "Iron Gates" National Park or have the status of historical or cultural monuments. Both natural and cultural heritage of "Iron Gates" has a considerable scientific, educational and tourism value [16; 18].

The most prominent peak in Gospođin Vir gorge is called Sokolovac and is located at the altitude of 625 meters, sprawling between two rivers Kozička and Pesača.

The entire Gospođin Vir gorge, from Bosman to Greben, can be observed from this lookout point. Greben, 199 meters above sea level, is located at the end of the hill Boljetinsko Brdo and has most peculiar geological formations.

A wonderful view of Donjomilanovačka ravine, from Greben to the far side of Golubinje, can be admired from Kovilovo, known also as Golo Brdo (a hill), which is located at the altitude of 358 meters. Ploče (375 m), Veliki Štrbac (768 m) and Mali Štrbac (626 m) are the highest peaks of Miroč Mountain as well as the most attractive lookout points in "Iron Gates" with breath-taking views over the Kazani gorges. They belong to the first level of protection because many animal and plant species can be found in their forest ecosystems. There are eight hiking trails in "Iron Gates" and some of them lead to the above-mentioned lookout points.

Accommodation Facilities and Tourist Flows in "Iron Gates" Park

In 2015, there were two establishments that belonged to the category of basic accommodation facilities in Golubac municipality, namely a two-star hotel and a B&B. In total, these two establishments had 59 available rooms with 122 permanent and 50 extra beds (177 in total). As regards the category of complementary accommodation facilities, there were 21 one-star private rooms with 50 permanent beds and one extra bed. In total, there were 80 available rooms with 223 permanent and 51 extra beds (274 in total) [19].

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Table 1

Geoheritage sites in "Iron Gates"

GEOHISTORICAL AND STRATIGRAPHIC HERITAGE SITES	
Palaeozoic sites	
Profile of Lower Carboniferous olistromes	***Avramac creek valley**, between Mountain Šomrda and River Kosobrdska, outside Donji Milanovac*
Profile of Westphalian river sediments	***River Boljetinska valley***, outside Boljetina
Jurassic sites	
Typical evolution profile in Southern Carpathians, between the Permian and Jurassic periods	***Pesača**, by the roadside, "Iron Gates" National Park*
Profile of liassic sediments with remnants of continental macroflora	***Dobra**, on the Danube, "Iron Gates" National Park*
Profile of Klaus facies or Klaus strata with predominantly ammonite fauna	***Greben (Reef) on the Danube and River Boljetinska canyon**, Iron Gates National Park*
Profile of Klaus strata with predominantly ammonite fauna	***Ribnica,** outside Donji Milanovac*
Stratotype profile, pelagic evolution in the Southern Carpathians	***Veliki greben (Great Reef)**, outside Donji Milanovac*
Profile of Boljetina limestone formation (Jurassic period)	***the place where the River Boljetinska flows into the Danube**, outside Donji Milanovac*
Profile of pelagic evolution in the Jurassic period bordering on the Lower Cretaceous period	***Lepensko Brdo (a hill)**, in the vicinity of the tunnel, Iron Gates National Park*
Cretaceous sites	
Profile of shallow-water strata of Alb.-Cenom	***Jabukovac**,Fountain Bobotovac outside Donji Milanovac*
Profile of deep-water formations of Lower Cretaceous period (limestone and marly)	***Veliki Greben (Great Reef) hinterland**, Donji Milanovac*
Džervin strata, Upper Cretaceous period	***Džervin Hill on the Danube**, between Negotin and Kladovo*
Neogene sites	
Abundant fauna from the Middle Badenian stage	***Donji Milanovac***
PETROLOGICAL HERITAGE SITES	
Sedimentary rocks	
Jurassic limestone	***Dobra-Boljetin***
Cretaceous limestone	***Dobra-Boljetin***
Igneous and metamorphic rocks	
Hercynian granite	***River Porečka valley**, from Miloševa Kula in the direction of Bor*
Amygdaloid spilite	***Dobra – Donji Milanovac***
Carboniferous-Permian tuffs	***Dobra – Donji Milanovac***
GEOMORPHOLOGICAL HERITAGE SITES	
Fluvial relief	
"Iron Gates" Gorge	***"Iron Gates" National Park***
Boljetinska River canyon	***"Iron Gates" National Park***
NEOTECTONIC STRUCTURES	
Epeirogenic movement	
Valleys of right-bank Danube tributaries	***Ključ, near Kladovo***
SPELEOLOGICAL STRUCTURES	
Caves	
Gradašnica cave	***Mosna***
Abysses	
Buranov ponor	***Golubinje***
Nemački ponor	***Miroč***
Suvi ponor	***Miroč***
Ibrin ponor	***Miroč***

Source: Inventory of Geoheritage Sites, 2004.

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Table 2

Nature reserves in "Iron Gates"

Reserve name	Reserve description
Golubac	Mixed forest consisting of Oriental hornbeam and common lilac, ailanthus & common lilac, beech & Oriental hornbeam, Hungarian oak, Turkey oak, Oriental hornbeam and beech with walnut
Bojana	Pure stands of walnut (*Juglans regia*) surrounded by mixed stands of beech and walnut (*Fagetum submontanum juglandetosum*); individual trees of Turkish hazel, Montpelier maple, flowering ash & common hornbeam
Brnjica River Gorge	Abundance of sessile oak and Turkish oak (*Quercetum petraeae-cerris*)
Tatarski Vis	Natural forests of sessile oak and hornbeam on crystalline schists and beech, linden & walnut on limestones
Šomrda	Northernmost habitat of holly (*Ilex aqufolium*)
Tilva Toma	Pure beech forest
Ciganski potok Stream	Pure mixed forest of walnut and beech (*Juglando-Fagetum moesiacae*) on the limestone substratum
Bosman-Sokolovac	Riparian area with Turkish hazel and common lilac
Čoka Njalta-Pesača	Natural arboretum, 40 different plant species
Lepenski Vir	Complex relict communities; relict forest of hackberry and walnut (*Celto-Juglandetum*) in Serbia; individual stand of hackberry, walnut, downy oak, Montpellier maple and lilac
Boljetin River-Greben	Willow belt
Kovilovo	Forest of sessile oak and hornbeam
Gradašnica	Mixed forest of beech and oak
Veliki Štrbac, Mali Štrbac with Tabula Traiana	Abundance of Turkish hazel; endemic species (yew, Montpellier maple, hackberry, smoke-tree & common lilac)

Source: [17]

Table 3

Cultural and historical heritage sites in "Iron Gates"

Object	Description of the object
Frontiers of the Roman Empire	Ancient fortification system along the right bank of the Danube
Lepenski Vir	Early Mesolithic to Early Neolithic settlement (9500–5500 BC), Boljetin village
Golubac Fortress	Medieval fortress at the entrance to the Djerdap Gorge
Rudna Glava	Earliest centre of copper mining in the Balkans, near Majdanpek
Kostol-Pontes/ Transdrobeta	Castrum Pontes, next to the Trajan's bridge, Kladovo
Diana-Karataš Diana/Zanes-Station	Remains of a fortress and castle, downstream of the HPP Djerdap I, Kladovo
Fetislam	Medieval fortress, Kladovo
Miroč Castle	Remains of a Roman fortress
Pena	Signal station between Mali Kazan and Veliki Kazan Gorge
Stara Čaršija	Old bazaar crafts centre, Kladovo
Saint Nicolas Church	Built in 1840 on the base of an old wooden church, Donji Milanovac
Tumane Monastery	Monastery complex, near Golubac
Golubinje traditional house	Reconstruction of an old traditional village, A part of Lepenski Vir complex
Katarinine Livade	Bronze Age settlement
Trajan' plaque/ *Tabula Traiana*	Latin inscription dedicated to the Roman Emperor Nerva Trajan, carved in the rock above the Danube River
Miroč village	Traditional architecture, Miroč Mt.
Manastirica Holy Trinity	Renovated monastery complex, Manastirica village (Novi Sip-Kladovo)

Source: [17]

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Table 4

Hiking Trails in "Iron Gates"

Trail	Length (km)	Average Slope (%)	Trail Difficulty Rating	Trail Type	Hiking Time	Start	Finish
Bosman – Sokolovac	10	15	Moderate	Hunting	4 hrs	Belgrade – Kladovo highway	Sokolovac, a mountain peak and a lookout point (683 m)
Gradašnica Cave	2	15–20	Moderate	Mountaineering	45 min	Miročki road	Gradašnica Cave
Buranov Ponor (abyss)	2.5	5–10	Easy	Tourist trail	90 min	Belgrade – Kladovo highway, starting point at Dobra Voda	Buranov Ponor
Veliki Štrbac and Mali Štrbac (mt. peaks)	9	20	Moderate	Mountaineering	3 hrs	Belgrade – Kladovo highway, starting point at Pecka Bara	Veliki Štrbac (768 m) and Mali Štrbac (626 m)
Boljetinska River canyon – Greben	1.8	5	Easy	Recreational trail	30 min	Boljetinsko Hill	Greben
Balta Alu Sontu lake – Glavica	5	10	Easy	Recreational trail	2.5 hrs	Donji Milanovac, from Paprenicki Creek	Balta Alu Sontu
Brnjička River canyon	21	10–20	Moderate	Tourist trail	8 hrs	Forest path, at the exit from village Brnjica	Rakovica village
Kovilovo	4	3–5	Easy	Tourist trail	2.5 hrs	Regional road Donji Milanovac – Majdanpek via Oman	Kovilovo

Table 5

Accommodation Facilities in Golubac Municipality in 2015

Golubac	Establishments	Rooms	Total number of beds	Permanent beds	Extra beds
Total	2	80	223	172	51
Basic accommodation facilities	2	59	172	122	50
Total number of hotels	1	50	150	100	50
Two-star hotels	1	50	150	100	50
Bed and Breakfast (Guest houses)	1	9	22	22	0
Complementary accommodation facilities	0	21	51	50	1
Total number of private rooms	...	21	51	50	1
One-star private rooms	...	21	51	50	1

Source: Statistički godišnjak Republike Srbije (2015). Beograd: Republički zavod za statistiku.

Table 6

Accommodation Facilities in Majdanpek Municipality in 2015

Majdanpek	Establishments	Rooms	Total number of beds	Permanent beds	Extra beds
Total	2	370	762	738	24
Basic accommodation facilities	2	300	580	580	0
Total number of hotels	2	300	580	580	0
Three-star hotels	2	300	580	580	0
Complementary accommodation facilities	0	70	182	158	24
Total number of private rooms	...	70	182	158	24
Two-star private rooms	...	70	182	158	24

Source: Statistički godišnjak Republike Srbije (2015). Beograd: Republički zavod za statistiku.

In the same year, there were registered two establishments that belonged to the category of accommodation facilities in Majdanpek municipality, namely two three-star hotels with 300 rooms and 580 permanent beds. In terms of complementary accommodation facilities, there were also 70 two-star private rooms with 158 permanent and 24 extra beds (182 in total). Overall, there were 370 available rooms with 738 permanent and 24 extra beds (762 in total) [19].

In Kladovo municipality in 2015, three establishments were registered, two of which were hotels (a four-star hotel and a one-star hotel) and one children and youth resort. There were in total 430 rooms, 197 in the hotels and 233 in complementary accommodation facilities. There

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were 25 three-star private homes and apartments and 77 private rooms. The children and youth resort had 131 rooms with 360 permanent and 84 extra beds (444 in total). There were 1,052 permanent and 108 extra beds, in total 1,160. There were, therefore, seven establishments in "Iron Gates" with 880 rooms and 2,145 beds available (1962 permanent and 183 extra beds) [19].

According to official records, there were in total 46,773 tourist arrivals at "Iron Gates" in 2015, made by 37,620 domestic and 9,153 international tourists. There were in total 94,934 registered overnight stays (75,459 domestic tourists and 19,475 international tourists). As can be seen from Table 5, in 2015, there was an upward trend in the number of both domestic and international visitors in 2015 in comparison with 2013 and 2014 [19].

Comparison of Tourism in Đerdap and Mehedinți

Table 9 shows the level of tourism development in Đerdap and Mehedinți. Based on the available data, we can conclude that the length of stay of tourists in both destinations is about two days. Such a short period of stay can be explained by the decline in the purchasing power of the population, the rising prices of services,

Table 7

Accommodation Facilities in Kladovo Municipality in 2015

Kladovo	Establishments	Rooms	Total number of beds	Permanent beds	Extra beds
Total	3	430	1160	1052	108
Basic accommodation facilities	2	197	471	459	12
Total number of hotels	2	197	471	459	12
Four-star hotels	1	53	71	71	0
Two-star hotels	1	144	400	388	12
Complementary accommodation facilities	1	233	689	593	96
Children and youth Resorts	1	131	444	360	84
Total number of private rooms	...	77	183	178	5
Three-star private rooms	...	77	183	178	5
Total number of private apartments	...	25	62	55	7
Three-star private apartments	...	25	55	7	

Source: Statistički godišnjak Republike Srbije (2015). Beograd: Republički zavod za statistiku.

Table 8

Tourist Flows in Iron Gates for the Period 2013–2015

Year	Municipality	Arrivals			Overnight stays		
		Total	Domestic	International	Total	Domestic	International
2015	Kladovo	22,347	18,791	3,556	49,326	40,810	8,516
	Majdanpek	21,507	16,876	4,631	41,751	31,910	9,841
	Golubac	2,919	1,953	966	3,857	2,739	1,118
2014	Kladovo	16,050	13,293	2,757	39,102	30,757	8,345
	Majdanpek	22,523	17,795	4,728	43,596	34,874	8,722
	Golubac	2,766	2,152	614	4,000	3,258	742
2013	Kladovo	23,746	20,610	3,136	63,577	55,715	7,862
	Majdanpek	25,562	20,979	4,583	51,924	42,838	9,086
	Golubac	4,962	4,426	536	8,878	8,120	758

Source: Statistički godišnjak Republike Srbije (2015). Beograd: Republički zavod za statistiku.

Table 9

Tourism development of Đerdap and Mehedinți

Tourist development indicators	Number of inhabitants (2011 Census)	Number of tourists	Number of nights	Number of beds	Length of stay (per day)	Functionality coefficient (%)	Capacity utilization (%)	Functionality intensity (%)
Đerdap (Serbia)	49,650	46,773	94,934	2,145	1.9	4.3	12.1	94.2
Mehedinți (Romania)	265,390	81,003	165,641	2,174	2.0	0.8	20.9	30.52

Source: Statistički godišnjak Republike Srbije (2015). Beograd: Republički zavod za statistiku; National Institute of Statistics. Retrieved from: http://statistici.insse.ro/shop/

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underdeveloped tourism infrastructure and lack of advertising. The coefficient of functionality in Đerdap (4.3%) is much higher than in Mehedinţi (0.8%): both destinations have approximately the same number of beds, but the number of inhabitants in Mehedinţi is about five times higher than the number of inhabitants in Đerdap. However, this indicator also points to greater sustainability of tourism in the Romanian region, as the local population is not burdened by the construction of infrastructure. The low utilization of accommodation capacities – 12.1% – shows that economically, tourism in Đerdap still has a long way to go. The intensity of functionality in Đerdap is very high (94.2%) and is almost three times higher than in Mehedinţi. According to our findings, the tourist traffic in Đerdap significantly exceeds the number of local residents, which means that there is demand for this destination which the host community might benefit from in the future through involvement in travel business, participating in cross-border projects and infrastructural development.

Conclusion

"Iron Gates" National Park has much potential for consolidating geoheritage sites into a single tourist route called "Iron Gates Geoheritage", which would in all probability enjoy success in the tourism market. Geoheritage sites could be incorporated into the current tourism offer that is already available in both regions. In this case, geoheritage sites could be presented either directly, as tourist destinations, or indirectly through event tourism, excursions, transit and other types of tourism. Geoheritage sites usually appeal to tourists if they are related to tours of archaeological sites, hiking tours and cultural tours or, in other words, recreational and educational tours.

The potential of both regions for the development of geotourism stems from their border positions and the low pressure that such sustainable tourism puts on the environment. Both regions are characterized by geodiversity, biodiversity and abundant cultural heritage. Some financial investment is required, however, to restore and build the necessary tourism infrastructure and to make the tourism industry more efficient. Other problems to deal with are the decline in the local population, which can lead to personnel shortages, poor management of natural and cultural resources and economic instability, resulting in the declining purchasing power of tourists coming to this destination. The orientation of tourist agencies towards inbound rather than outbound tourism, as well as targeted and professional promotion of geo-tourism will surely improve the tourism development of Đerdap and Mehedinţi regions. In the future, it would be necessary to consider the positive and negative effects of an increase in the number of tourist arrivals as this trend may be detrimental to the park's eco-system, put excessive load on the carrying capacity of the park's sites and influence the quality of tourist services.

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Tourism development and regional disparities in Serbia

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ABSTRACT
This paper discusses regional disparities and general national trends in the development of tourism industry in Serbia. Serbia has a rich and well-preserved cultural and natural heritage, which means that this country holds significant potential for the development of tourism. Our analysis assessed the dynamics of tourism development by using census data and focusing on such indicators as the population size of different regions, the share of people employed in tourism, the proportion of economically active population and tourism traffic (the number of foreign tourists and overnight stays). All indicators were analyzed by calculating the index of change. The results show that in Serbia, tourism has not yet achieved an adequate level of development and plays a secondary role in the country's economy even though it could contribute to the demographic revitalization of Serbian regions. There is also a steady growth in the number of people employed in the tourism sector. Among other Serbian regions, Belgrade has the most thriving tourism industry due to its status of the capital city. Other regions also demonstrate significant growth in the traffic of foreign tourists, especially Zlatibor, Moravica, and Toplica. Adequate management and promotion of these destinations on the international tourism market have proven to be quite effective.

KEYWORDS
tourism, economic evaluation, unbalanced regional development, regional disparities, Serbia

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Развитие туризма и региональное неравенство в Сербии

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АННОТАЦИЯ
В данной статье рассмотрены региональные различия и общие национальные тенденции в развитии туризма в Сербии. Сербия обладает богатым и хорошо сохранившимся культурным и природным наследием, а это значит, что страна обладает значительным потенциалом для развития туризма. Наш анализ оценил динамику развития туризма с использованием данных переписи и сосредоточился на таких показателях, как численность населения различных регионов, доля людей, занятых в туризме, доля экономически активного населения и туристический трафик (количество иностранных туристов и ночёвок). Все показатели были проанализированы путем расчета индекса изменения. Результаты показывают, что в Сербии туризм еще не достиг адекватного уровня развития и играет второстепенную роль в экономике страны, хотя он может способствовать демографическому оживлению сербских регионов. Также наблюдается устойчивый рост числа людей, занятых в сфере туризма. Среди других сербских регионов, Белград имеет наиболее процветающую индустрию туризма из-за статуса столицы. Другие регионы также демонстрируют значительный рост трафика иностранных туристов, особенно Златибор, Моравица и Топлица. Адекватное управление и продвижение этих направлений на международном туристическом рынке доказали свою эффективность.

КЛЮЧЕВЫЕ СЛОВА
туризм, экономическая оценка, несбалансированное региональное развитие, региональные различия, Сербия

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Introduction

Tourism is one of the fastest growing industries in the world. The number of tourist arrivals is constantly growing: from 25 million in 1950 to 1,323 million in 2017 (+6.7% compared to 2016). The sector's share in the global GDP is 10.4% and the sector provides 313 million jobs (9.9% of total employment or 1 out of 10 jobs) [1]. This growth results from the increased amount of free time, increased mobility of goods and people, and a decrease in transportation costs [2]. The rising economic importance of tourism made it a desirable development prospect for many regions. Tourism impacts income distribution at the global level, but also income circulation between different sectors of national economy [3]. As a labor-intensive activity, tourism creates new jobs and provides workplaces for undereducated people, thus improving their quality of life. It also enhances tax revenues and facilitates economic development [4].

The Republic of Serbia is situated in South-Eastern Europe. The whole territory is divided into five regions (Belgarde, Vojvodina, Šumadija and Western Serbia, South and East Serbia, and Kosovo and Metohija). The regions are further categorized into thirty areas. The country is currently struggling with numerous social, political, and economic issues. Although tourism in Serbia is still in its initial phase of development, it holds significant potential and resources (thermal springs, protected natural areas, UNESCO cultural heritage, historical monuments, gastronomy, etc.), which is not well valorized or promoted. The Tourism Development Strategy (2016–2025) identifies 18 tourism destinations depending on their potential, the current state of tourism infra and supra structure, and significance for the creation of the country's recognizable tourist product [5]. The following tourism products have been chosen as a high priority to be developed by 2021: MICE and business tourism, mountain and lake tourism, city breaks, and spa & wellness tourism. Medium priority (in 5–10 years) has been given to round trips and nautical tourism, while events, special interest tourism, rural, and transit tourism should be developed continuously as an added value to the tourism development of the whole country [5].

Among the challenges that Serbian tourism currently has to deal with the political and socio-economic situation; the lack of unique tourist product; the low quality of services; unbalanced price-quality ratio; and the outdated infra and supra structure [6]. There are also considerable differences between the regions in terms of tourism development. The WTTC annual report (2018) confirmed that Serbia ranks quite low on the global tourism market (rank 108/185) [7]. Even though the total number of tourist arrivals and overnight stays in Serbia has been continuously growing, the growth rates still remain low[1].

Theoretical framework

Tourism and regional development are closely connected. Tourism is often developed outside of industrialized centers in underdeveloped regions. These regions are usually below the national level according to socio-economic indicators, but they are attractive for tourists. Tourism product is very specific because tourists buy offered experiences, so the consumption and production are inseparable and have to be delivered in a tourist destination [8]. The nature of tourism is very complex as it includes people, their movement, stays, different products and services. Tourism does not represent one economic activity, it is a system that depends on several supporting economies [9]. The complexity of this system determines the effects that tourism has on the region in which it has been developed. Direct effects of tourism could be seen through residents' and non-residents' spending on business and leisure and the government's spending on objects related to tourism industry such as museums and national parks. The indirect or wider impact includes investment in accommodation capacities, the state investment in tourism, funds spent by enterprises that are directly involved in tourism [7]. In addition, tourism has multiplier effects that contribute to the whole regional economy. These effects are more visible than in any other sector and function as economic boosters for underdeveloped regions [9]. Furthermore, the multiplier effect has a higher value in urban than in rural areas because economy in urbanized areas is more diverse [10]. Apart from these positive effects, tourism can also have certain negative consequences, for example, social and environmental. Therefore, policymakers in the sphere of tourism have to solve a complex of problems – how to find a most suitable way to enhance tourism competitiveness on the regional level and how to ensure sustainable tourism development on the national level [11].

Since tourism was recognized as an economic activity, evaluation of its economic effects has

[1] Statistical Office of the Republic of Serbia. (2018). *Tourism*. Retrieved from http://www.stat.gov.rs/sr-latn/oblasti/ugostiteljstvo-i-turizam/turizam

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started to play a key role in the planning of its development. In theory and practice, there are several different approaches to measuring the impact of tourism on regional or national economy, but none could be considered as optimal [12]. There are such traditional techniques as multiplier analysis, input-output analysis, Keynesian, export-based, ad-hoc models, etc. Their limitations are criticized in research literature on tourism, for example, the biggest problem in the case of input-output analysis is that it focuses on direct effects, overestimates the impacts of tourism on economy or some indicators (e.g. employment) and does not take into account the negative effects which can outweigh the positive ones [13]. Keynesian and export-based models rely on the assumption that tourism provides money injections into the economy of tourist destinations, which means that local households and companies receive extra income and try to save more. Ad-hoc models are based on the input-output and Keynesian models and include the sectors that are relevant for tourism industry [12].

On the other hand, there are new, modern approaches that are more comprehensive, such as computable general equilibrium (CGE) models, macro-econometric modeling, and money generation models (MGM) used for assessment of different economic activities, including tourism (e.g. in Australia, Indonesia, Hawai, Spain, the United Kingdom). CGE models have incorporated input-output analysis and include more indicators for quantitative evaluation of the net impact of changes on output, employment, and imports [13]. The results are more valid and show the impact of tourism on economy more accurately, without exaggerations or misconceptions of tourism as some kind of "magic wand". Macro-econometric modeling requires less data and is simpler for implementation, but cannot explain the relationship between industries within economy [14]. CGE models and macro-econometric modeling are more suitable for larger areas (national level), but input-output analysis and money generation models are better for regional and local levels. MGM models allow to estimate the effects of tourism spendings on employment, income, and tax revenue [15].

Methodology

As we have pointed out above, there are several models that are commonly used to assess the impact of tourism on economy. These approaches are based on measuring the impacts of international tourism revenue. Tourism contributes to the revenue of the country of destination, its economic growth, balance of payments, and so on. In Serbia, these effects are calculated by the National Bank of Serbia (NBS) by using the data on foreign exchange and annual tourism turnover. Economic effects of tourism are also estimated by looking at the data on direct foreign investment in the tourism sector [16]. In 2007–2017, the foreign exchange inflow increased to 84%, while the foreign exchange outflow, to 44%, which means that foreign tourism has become more important for Serbian economy. On the other hand, the Travel & Tourism Competitiveness Index report (2017) showed a low level of tourism development in Serbia in comparison with other countries of the Balkan Peninsular and Eastern Europe [17].

Even though tourism does not play an important role in Serbian economy, it has been included into the country's development strategies. The significant economic disparities between Serbian regions also affect tourism [18]. The dynamics of tourism development has been assessed with the help of Census data (2002 and 2011) and by analyzing such indicators as the population of different regions, the share of people employed in the tourism industry, the proportion of economically active population, and so on. Since the Statistical Office of the Republic of Serbia does not provide data on the number of people working in the tourism industry, we use the data on those employed in accommodation and food services instead. In order to get a more complete picture of tourism in Serbia, we also use the data on tourism traffic (the number of foreign tourists and overnight stays) for the years of last two censuses and also for the last ten-year period.

All indicators were analyzed by calculating the index of change. The index threshold value is 100. If the calculated value is higher than 100, an increase is recorded and if it is lower than 100, then a decline [19]. The data were provided by the Statistical Office of the Republic of Serbia. For the economic and demographic indicators, the census (2002/2011) data were used. The tourism traffic data were collected from the annual publications "Municipalities and Regions of the Republic of Serbia" (2002, 2007, 2011, and 2016).

Results and discussion

In the last inter-census period, there was recorded a general population decline (–4.15%) in Serbia caused by the poor socio-economic situa-

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tion. These results once again confirmed that Serbia has been facing depopulation for a long time. The strategies aimed at addressing this issue often mention tourism as a revitalization factor even though there is evidence that in some cases tourism may have a negative impact on population dynamics. In other cases, however, tourism stimulated demographic growth, reduced the outflow of workforce to other regions and helped attract migrants (e.g. Spain, Greece), but it still cannot be seen as a universal strategy [20]. Additionally, population decline from –1.42% to –30.13% was detected in all regions, except Belgrade, where a slight increase was recorded (+5.29%) due to migration. Furthermore, at the local level, there was a population increase in Belgrade, South Bačka, and Raška. In Belgrade and South Bačka, this growth can be explained by the fact that migrants are attracted by the largest Serbian cities located in these regions – the capital and the main administrative center Vojvodina. In Raška, the population growth could be a result of the traditional reproductive model of the local community. Thus, it can be concluded that in Serbia, tourism has not reached the level of development that would generate population growth. Together with the overall population decline, there is also a decrease in the economically active population (–35.92% to –1.975%) (see Table 1).

Table 1

Index of change of demographic and economic indicators (2011/2002)

Region	Total population	Economically active population	Secondary sector	Tourism
Serbia	95.85	87.2	69.06	106.85
Belgrade region	105.29	106.65	82.56	132.54
Belgrade area	105.29	106.65	82.56	132.54
Vojvodina region	95.07	86.62	76.83	104.08
North Bačka area	93.39	84.65	71.91	109.76
Centra Banat area	90.03	78.05	71.89	83.80
North Banat area	89.08	79.04	72.36	77.95
South Banat area	93.56	79.98	72.41	102.35
West Bačka area	87.89	77.25	62.87	71.68
South Bačka area	103.66	98.03	81.64	125.07
Srem area	92.97	88.50	92.14	110.25
Šumadija and Western Serbia region	95.08	82.78	74.68	102.11
Mačva area	90.69	76.11	79.44	85.36
Kolubara area	90.80	89.97	95.63	100.34
Šumadija area	98.17	85.81	76.92	110.45
Pomoravlje area	94.33	77.37	70.05	111.07
Zlatibor area	91.43	86.02	70.63	94.95
Moravica area	94.59	83.88	69.96	103.94
Raška area	106.19	87.03	75.61	112.25
Rasina area	93.28	77.62	67.86	102.32
South and East Serbia region	89.21	75.68	65.57	87.01
Podunavlje area	94.82	76.25	75.69	79.30
Braničevo area	91.58	72.59	82.05	100.23
Bor area	85.29	73.27	61.03	69.95
Zaječar area	87.21	86.31	57.69	97.63
Nišava area	98.58	82.94	70.50	101.33
Toplica area	89.89	69.46	61.25	65.04
Pirot area	87.53	71.72	57.19	83.29
Jablanica area	89.78	76.20	59.38	85.34
Pčinja area	69.87	64.08	59.66	76.27
Kosovo and Metohija*	–	–	–	–

Sourse: 2002 Census of Population, Households and Dwellings in the Republic of Serbia. Population. Age and Sex. Belgrade: Statistical Office of the Republic of Serbia. Retrieved from http://publikacije.stat.gov.rs/G2002/Pdf/G20024002.pdf; *2002 Census of Population, Households and Dwellings in the Republic of Serbia. Population. Economically Active Population That Perform Occupation*. Belgrade: Statistical Office of the Republic of Serbia. Retrieved from http://publikacije.stat.gov.rs/G2002/Pdf/G20024006.pdf; *2011 Census of Population, Households and Dwellings in the Republic of Serbia, Population. Age and Sex*. Belgrade: Statistical Office of the Republic of Serbia. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/Popis2011/Starost%20i%20pol-Age%20and%20sex.pdf; *2011 Census of Population, Households and Dwellings in the Republic of Serbia. Industry Data by Municipalities and Cities*. Belgrade: Statistical Office of the Republic of Serbia. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/G2014/pdf/G20144002.pdf.

Note: * The data about Kosovo and Metohija are not available due to the current political situation.

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In those regions and areas where tourism plays the dominant role, the tertiary sector employs a considerable share of the economically active population and affects the development of supporting industries [20]. It determines these regions' transition from the dominant primary and secondary to the tertiary sector.

Serbia has recorded a constant decline in the number of employees in the secondary sector (–30.94%) due to the recession that the country's economy entered after the collapse of Yugoslavia in the 1990s. There are some more recent issues to deal with: most large formerly state-owned factories in Serbia have been privatized and are now struggling or closing down, which aggravated the situation in the secondary sector. Furthermore, in the last inter-census period, the number of people employed in the secondary sector decreased across the country. The smallest decline was recorded in the capital – Belgrade region. On the other hand, during this decade, there was an increase in the number of people employed in tourism (+6.85%). The most significant growth was again found in Belgrade region (+32.54%), much higher than the national average; in Vojvodina region (4.08%); and Šumadija and Western Serbia (2.11%). There was, however, an almost 23% decrease in South and East Serbia. This situation can hardly be called surprising because South and East Serbia has long been known to be the least developed part of the country and also the most depopulated. If we look at the share of people employed in the secondary sector (20–29%) and in tourism (2–4%) and at the corresponding index of changes, we can see that the percentage of people employed in the tourism sector is still low in all the regions although there is a positive trend, which indicates the growing importance of tourism, especially in Zlatibor (3.9%), Belgrade (3.48%), and South Bačka (3.18%).

Another key indicator of tourism development in Serbia is tourism traffic (see Table 2). We used the data on foreign tourist arrivals and overnight stays for the periods of 2011/2002 and 2007/2016 because the foreign exchange data are used by the NBS in their evaluation of the tourism impact on Serbian economy. In terms of tourism traffic, Belgrade again occupies a dominant position (over 50% of the total foreign tourism traffic), which can be explained by the location of the main airport in this region and the city's status of the capital.

Table 2

Foreign tourism traffic: index of change in 2011/2002 and 2016/2007

Region	2011/2002		2016/2007	
	Tourists	Overnight stays	Tourists	Overnight stays
Serbia	244.88	222.56	184.10	185.61
Belgrade region	230.69	199.85	169.08	169.40
Belgrade area	230.69	199.85	169.08	169.40
Vojvodina region	241.93	252.51	206.32	201.09
North Bačka area	260.63	236.88	281.57	220.93
Centra Banat area	228.15	338.96	222.85	291.56
North Banat area	272.04	356.43	95.13	70.07
South Banat area	178.07	151.53	151.31	141.61
West Bačka area	181.45	139.96	94.52	70.80
South Bačka area	267.81	285.76	214.50	228.82
Srem area	131.37	131.48	241.98	306.84
Šumadija and Western Serbia region	303.66	264.81	224.98	215.45
Mačva area	84.84	104.17	237.45	191.41
Kolubara area	278.86	278.76	118.10	106.39
Šumadija area	396.02	370.85	263.71	263.09
Pomoravlje area	397.74	610.95	86.56	104.27
Zlatibor area	429.76	408.61	273.27	237.12
Moravica area	303.82	412.46	195.82	253.48
Raška area	260.83	203.99	256.56	215.06
Rasina area	339.68	331.71	144.17	178.98
South and East Serbia region	258.00	237.63	190.15	206.09
Podunavlje area	146.93	147.95	61.45	91.13
Braničevo area	277.90	159.52	312.91	261.77
Bor area	323.15	298.57	235.21	225.27
Zaječar area	200.47	230.15	339.18	262.66
Nišava area	358.69	323.56	173.21	190.11
Toplica area	1246.64	907.20	410.64	472.31
Pirot area	76.08	108.95	299.96	315.52
Jablanica area	230.09	208.92	196.63	216.97
Pčinja area	153.48	144.63	166.49	133.99
Kosovo and Metohija	–	–	–	–

Sourse: Municipalities of the Republic of Serbia (2004). Belgrade: Statistical Office of the Republic of Serbia. Retrieved from http://publikacije.stat.gov.rs/G2003/Pdf/G20032002.pdf; *Municipality of the Republic of Serbia* (2008). Belgrade: Statistical Office of the Republic of Serbia Retrieved from http://publikacije.stat.gov.rs/G2008/Pdf/G20082001.pdf; *Municipality and Regions of the Republic of Serbia* (2012). Belgrade: Statistical Office of the Republic of Serbia Retrieved from http://publikacije.stat.gov.rs/G2012/Pdf/G20122008.pdf; *Municipality and Regions of the Republic of Serbia* (2017). Belgrade: Statistical Office of the Republic of Serbia Retrieved from http://publikacije.stat.gov.rs/G2017/Pdf/G201713044.pdf.

In addition, in both periods, there was a significant increase in the number of foreign tourists and overnight stays (around 200%). The highest steady growth has been found in Šumadija and Western Serbia, especially in Zlatibor and Mora-

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vica. Tourism development in these two areas follows the general national trends, but it also results from the efforts of the Regional Tourism Organization of Western Serbia, which operates in these two areas. The Organization successfully promotes the region as a unique destination on the tourism market. Additionally, Toplica in South and East Serbia has shown a considerable growth in foreign tourism traffic. This region has been attractive for domestic tourists for a long time, but it became visible to the international audience in 2002 when Natural Monument Djavolja Varoš (Kuršulmija) was submitted for admission to the UNESCO's list by the Institute for the Protection of Nature of Serbia. The monument is still on the tentative list but already represents one of the national symbols [21]. In 2015, an airport was opened in Niš, which also positively affected the foreign tourism traffic in Toplica.

Conclusion

In Serbia, a country with rich natural and cultural heritage, tourism has been regarded as a part of the general strategy of national economic development: not only does it create jobs for people with different levels of education but it also uses the products and services provided by other sectors of economy. Our analysis, however, has shown that tourism does not play a primary role in Serbian economy although the number of people employed in this sector has been growing steadily. The development of tourism in Serbian regions led to greater diversification of regional economy, enhanced economic security, raised the quality of life of local communities through investment in the infra and supra-structure [22]. The data on foreign tourism traffic once again confirmed that there are positive trends in tourism development in Serbian regions. The dominance of Belgrade region as a tourism destination is obvious, so the decision-makers should promote dispersive development of tourism and implement other policies to ensure more balanced regional development. By promoting their tourist sites on the international market, Zlatibor, Moravica, and Toplica have also managed to achieve some positive results. Other Serbian regions could benefit from this experience and increase their visibility on the international tourism market with the help of an efficient promotion campaign. Despite the objective limitations faced by tourism in Serbia, creation of regional tourism organizations would facilitate promotion and positioning of a recognizable tourism product both on national and international levels; it would also boost small and medium-sized entrepreneurship in regions.

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