THE CONCEPT OF ARTIFICIAL INTELLIGENCE AND ITS SCOPE IN ECONOMIC DEVELOPMENT

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Abstracts: The enormous growth and development of technology, especially since the beginning of the 21st century, has led to an increase in the amount of information we are surrounded by. Thanks to this fact, the basis for action and accelerated development of programs based on artificial intelligence concepts was created. The mentioned programs base their work on the automated processing, collection and systematization of data without the participation of human activity in these processes, that is, without the use of human intelligence. Due to the speed and efficiency of such a way of manipulating a large amount of data, the concept of artificial intelligence introduces numerous changes and totally changes the way numerous social areas function. The subject of the author's interest will be pointing out the very importance and way of functioning of the concept of artificial intelligence, pointing out the advantages and disadvantages of that concept, and all through looking at its impact on economic development.

Keywords: artificial intelligence, personal data, economy, economic development, algorithm

1. Introduction

The world we are surrounded by rests on a large number of data points that together form a perfectly structured, interconnected system. The ways in which people have gained knowledge about this system have evolved over time. The initial stage in this process involved individuals using their own intelligence to determine the significance of data, its connections to other data within the system, and using that knowledge to classify it in desired ways. This manual data manipulation implied human intervention in every phase of data processing. However, with the development of digital and information technologies, the situation rapidly improved. Under the influence of modern technologies, the volume of information surrounding us increased dramatically. This information grew so rapidly that over time, human intelligence, which had been the sole method of processing this information, proved inadequate in dealing with the growing volume of data. This fact gradually led to the emergence of increasingly sophisticated artificial intelligence systems and the programs based on them. Artificial intelligence attempts to simulate intelligent behavior within a system, requiring accurate and comprehensive information and knowledge representation. Artificial intelligence systems, in other words, are based on the idea that through the application of machine learning rules, automated information processing is conducted by computer systems, and this system consists of „software and possibly hardware that uses artificial intelligence technologies" (Borges, 2021). Artificial intelligence, in other words, is based on the premise that data processing, classification, and integration are performed without the presence of human intelligence, which specifically means that instead of humans, all these processes are carried out by computers using machine learning rules. Simply put, what is the essence of machine learning? Machine learning is a branch of computer science focused on enabling artificial intelligence to learn certain tasks in the way humans do, meaning that in this process, it imitates human learning[4]. This imitation is best achi-

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[4] The essence, in other words, boils down to artificial intelligence imitating human behavior, meaning it represents the adaptation of artificial intelligence to human intelligence in order to manipulate vast amounts of data in the most realistic way possible through automated processes. For more on this, see...: https://raf.edu.rs/citaliste/najnoviji-it-dogadjaji/sta-je-masinsko-ucenje-i-sta-su-inteligen-

eved through the establishment of algorithms. An algorithm refers to „... a set of steps that artificial intelligence can use to solve problems."[5] This means that artificial intelligence, by imitating human intelligence, follows a series of steps (instructions) through which it approaches the processing and systematization of data. It implies that „Computational Intelligence (CI) refers to the use of intelligent techniques and algorithmic models applied to processes characterized by incomplete definitions, nonlinearity, time variation, and stochasticity" (Šešum, Čavić, 2023).

This nature of artificial intelligence enables its practical application in various fields of human activity, from economics, law, and informatics to medicine and pharmacy (Makojević, 2024). However, in theory, there are debates regarding the usefulness of the artificial intelligence concept. While there are numerous undeniable advantages, there are also significant drawbacks that must be highlighted to ensure that artificial intelligence becomes a partner in overall development rather than an antithesis to everything created so far.

The primary advantage of the artificial intelligence concept lies in saving both material and human resources in the process of data processing and selection, simultaneously modernizing and improving economic operations, which leads to faster economic growth of the state as a whole. Proponents point out that artificial intelligence is the driving force behind the fourth technological revolution and, as such, will impact the economic growth and development not only of developed countries but also of underdeveloped and developing countries (Makojević, 2024).

On the other hand, the main drawback of the artificial intelligence concept is that it will bring about tectonic changes in many markets, including the labor market. The need for certain jobs will be called into question, and a large number of people will lose their jobs. Furthermore, „opponents of artificial intelligence place particular emphasis on the fact that its development is funded by companies that control a significant portion of the technology products and services market, further threatening the business of less

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tni-algoritmi/, the date of access to the specified document: 19.09.2024.
[5] See more about this in: https://raf.edu.rs/citaliste/najnoviji-it-

dogadjaji/sta-je-masinsko-ucenje-i-sta-su-inteligentni-algoritmi/, the date of access to the specified document: 19.09.2024.

influential players and raising concerns about control" (Makojević, 2024). This creates a significant risk of monopolies forming in most markets, thereby endangering the survival of weaker competitors.

When we talk about the concept of machine learning, which aids artificial intelligence in performing activities, its main drawbacks primarily relate to the quality of data that artificial intelligence has access to. It is essential that the data be consistent, both in qualitative and quantitative terms. Therefore, if the data provided to artificial intelligence is limited, biased, or of low quality, we will end up with biased artificial intelligence of limited scope.[6]. However, there are times when the data might be perfectly fine—high quality and unbiased—yet the artificial intelligence system can still be misused by people. An example of this can be false video or audio recordings, which are especially common on social media and often used as tools for blackmail. It is well known, for instance, that „deepfake

videos originated from technology used to enhance special effects in cinema, but they can also be used to deceive people."[7] From all of the above, we can clearly conclude that „artificial intelligence (AI) is a broad field that today encompasses numerous methods and deals with solving various real-life problems, typically complex and difficult to solve by other approaches.[8]

2. Business ethics and contemporary business environment Automated data processing as a key concept on which the artificial intelligence system is based

Since artificial intelligence, as we have emphasized, processes a large amount of data through the application of machine learning rules, the key way it does this, which also reflects its nature, is through automated processing and systemaization of the mentioned data. The key difference lies in the human approach to data collection. Unlike manual pro-

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[6] See more about this in: https://raf.edu.rs/citaliste/najnoviji-it-dogadjaji/sta-je-masinsko-ucenje-i-sta-su-inteligentni-algoritmi/, the date of access to the specified document: 19.09.2024.
[7] See more about this in: https://raf.edu.rs/citaliste/najnoviji-it-dogadjaji/sta-je-masinsko-ucenje-i-sta-su-

inteligentni-algoritmi/, the date of access to the specified document: 19.09.2024.
[8] See more about this in: Šešum, Čavić, V., *Uvod u veštačku inteligenciju,* Građevinski fakultet, Univerzitet u Beogradu, 2023., page 9.

cessing, which is based on human intervention and the use of natural intelligence to handle vast amounts of data, automated processing, on which the artificial intelligence system is based, completely eliminates humans and their intelligence from this process, leaving it all to the computer. The computer, by applying algorithms and through the process of machine learning, imitates human intelligence and follows instructions and corresponding steps in data collection, processing, and systematization.

Automated data processing is most commonly performed through profiling procedures. Simply put, profiling is „any form of automated processing of personal data that involves the use of personal data to evaluate certain personal aspects related to a natural person, particularly for analyzing or predicting aspects related to job performance, economic status, health, personal preferences, interests, reliability, behavior, location, or movements of that natural person."[9] Drugim rečima, suština koncepta profilisanja se svodi na to, da veštačka inteligencija, praćenjem ličnih afiniteta i sklonosti određenog lica, u dužem vremenskom periodu, predvidi ponašanje i delanje istog u nekom budućem vremenskom periodu. Analizirajući predmetnu definiciju, možemo ustanoviti da se „profilisanje … sastoji od tri elementa: mora biti automatizovan oblik obrade; mora se izvršiti na ličnim podacima; i cilj profilisanja mora biti procena ličnih aspekata fizičkog lica"[10]. Profilisanje karakteriše činjenica da rukovalac automatski obrađuje lične podatke kako bi uz pomoć algoritama analizirao ili predvideo određene aspekte koji se odnose na osobu[11]. However, just like artificial intelligence systems based on automated data processing, profiling, in addition to its many advantages, also has certain drawbacks. What exactly does this mean? It is an undeniable fact that tracking a person's preferences, affinities, and personal inclinations over a long period is highly useful, as

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[9] To see: *Opšta uredba 2016/679 o zaštiti fizičkih lica u odnosu na obradu podataka o ličnosti, i o slobodnom kretanju takvih podataka,* čl. 4, st. 1, tač. 4.

[10] See more about this in: *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679,* 2017, str. 6.

[11] See more about this in: Hanold, S., *Profiling und automatisierte einzelentscheidungen im*

versicherunsbereich, 2019, str. 4. The mentioned source can be accessed at: https://www.repo.uni-hannover.de/bitstream/handle/123456789/5167/Profiling%20und%20automatisierte%20Einzelentscheidungen%20im%20Versicherungsbereich_Stefanie%20H%C3%A4nold.pdf?sequence=1, the date of access to the specified document: 24.09.2024.

this approach can reveal many insights about the individual, potentially making it easier to predict future behavior.

However, it would be ideal if a person's desires and wants were constant. In reality, the opposite often occurs—these aspects can be volatile and change over time, which can complicate accurate predictions of future behavior through profiling. On the other hand, there are certain personal data points that can be subject to profiling but are less dependent on the individual and more influenced by external factors beyond their control. This is especially evident in the cases of health and financial status, if they are considered in the profiling process.

For instance, a person's financial situation can fluctuate, meaning they may show interest in specific activities during a particular period, but over time, due to a lack of resources, they may lose interest. Similarly, health conditions can both „drive" or „hinder" the activities people undertake. These examples highlight the primary weaknesses of profiling processes, as they make it difficult to draw accurate and complete conclusions about future behavior based on such data.

Despite these shortcomings, it is important to acknowledge that the advantages still prevail. Therefore, we can conclude that „profiling and automated decision-making are increasingly used across various sectors, both private and public, such as banking and finance, healthcare, taxation, insurance, marketing, and advertising… just to name a few examples where profiling is regularly implemented to assist in decision-making."[12]

- The three-step model on which the process of automated data processing and profiling is based

It has already been emphasized that the existence of a large amount of data is the fundamental and most necessary prerequisite for the concept of artificial intelligence. The essence lies in the specific way data is collected, processed, and systematized. By applying the principles of machine learning through automated processing, artificial intelligence „handles" vast amounts of information. When discussing automated processing as well as the concept of profiling, it is important to highlight that profiling procedures must

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[12] See more about this in: *Guidelines on Automated individual decision-making and Profiling* *for the purposes of Regulation 2016/679,* 2017, page 5.

be treated as separate and distinct processes from decision-making and execution. Decision-making and execution stem from the results obtained from profiling, but they are quantitatively and qualitatively different from it.

To clarify this fact in the simplest way, we will use the example of the so-called „three-step model," which is widely applied when conducting profiling and automated data processing. This model is based on three phases that must be followed successively to reach a satisfactory result—namely, a decision made based on a correctly assessed factual and real framework. Only such a decision provides a valid foundation for proceeding with its execution.

i. First phase of the three-step model – data collection

Considering all that has been said about the profiling process so far, and recognizing that data (information) is the foundation of the concept of artificial intelligence, it is no surprise that this phase receives significant attention during the profiling process. Given that vast amounts of data are handled, the nature of the data is of great importance. Here, a distinction is made between personal data, which directly relates to the individual being assessed in a particular case, and abstract comparative data, which are collected and evaluated on a large scale (often, though not necessarily, in an anonymous form) to generate experience sets and form comparison groups.[13] As can be observed, the artificial intelligence system faces a significant test right from the first step. By imitating human intelligence through the application of machine learning systems, artificial intelligence must assess the interrelationship of the relevant data (information) and their connections. However, it is also essential to indicate whether the observed data is associated with a specific „personal characteristic." Recognizing this fact is of utmost importance since one of the greatest challenges in this field is a potential conflict between the artificial intelligence system and the need to protect personal data.

It is necessary to ensure that data containing characteristics that could identify individuals are processed,

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[13]See more about this in: Wiedemann, K., *Rechtliche Implikationen Profling-basierter Preispersonalisierung*, Munich Studies on Innovation and Competition, 2023, page 37. The mentioned source can be accessed at:

https://library.oapen.org/bitstream/id/8eefa175-856b-4036-8ca4-b636e94f4e7e/978-3-662-67452-9.pdf, the date of access to the specified document: 24.09.2024.

classified, and systematized by artificial intelligence in a manner that does not compromise their confidentiality. In other words, the use of artificial intelligence cannot be an excuse for violating the principles of confidentiality regarding specific personal data. Thus, the need for personal data protection and the artificial intelligence system must be „partners" in the modernization process, not „antipodes".

Data acquisition is crucial, and through this action, the essence of the entire first phase of the three-step model, upon which profiling procedures are based, is revealed. There are various sources from which relevant data can be collected. However, the method of collection largely depends on the type of data in question. In this regard, a distinction is often made between abstract comparative data, anonymous data, anonymized data, and personal data.

The first in this series is abstract comparative data, which is considered highly significant in profiling procedures. This type of data is also referred to as „experience data" or „comparison data."[14] From these two names, it may be easiest to conclude what their essence consists of. The

goal is to observe and track the experiences of individuals connected to specific experiential events to draw conclusions about how other individuals in similar situations might behave. An example can be drawn from the practice of an American retail chain that monitored the purchasing habits of pregnant women over an extended period. Based on the abstract data obtained, this retail chain could, with high probability, conclude whether women were pregnant based on their responses. In other words, the assumption underlying the idea of using abstract comparative data is based on the premise that people in the same life and experiential situation tend to behave similarly.

Abstract comparative data is vital for retail chains as it provides insights into the types of goods/services preferred by specific customer categories. This means that, based on the obtained abstract comparative data, correct conclusions can be drawn about the personal characteristics of individuals connected by the same life or experiential fact.

In addition to a large volume of abstract data, which is essential for conducting profiling, it is also crucial

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[14] These terms, among others, are used by: Wiedemann, K., *Rechtliche Implikationen Profling-basierter Preispersonalisi-*

erung, Munich Studies on Innovation and Competition, 2023, page 39.

that this data is characterized by accuracy. It is important that the data is updated and aligned with the real social state. Incorrect or outdated data cannot lead to correct conclusions, and consequently, one cannot expect correct decision-making, let alone the execution of such decisions. It is essential to emphasize that the implementation of the profiling concept cannot be imagined without the use of this type of data. Moreover, the question arises as to whether abstract comparative data is associated with a specific personal characteristic that could be used to assess an individual's identity. With abstract comparative data, it is certain that a certain degree of „personal" aspect exists.

In the case of pregnant women, during this data collection phase, artificial intelligence is not interested in the identity of the pregnant woman but rather in her state, which still contains a degree of personal characteristic. Thus, in other words, this data is known as anonymized data, which is sufficient for comparison.

The next category includes anonymous data. Although it may not seem so at first glance, they can also be used in the context of profiling. In simple terms, these are data that lack any personal reference. In other words, analyzing this data cannot, in any way, identify a specific individual to whom the data refers. For example, this can include data about time, geographical location, altitude, and similar information, as well as any data relating to a pre-defined group of people not connected by any personal attributes. In the context of profiling, using anonymous data, conclusions can be drawn about which products or services are, for instance, the best sellers in mountain resorts compared to those in spas or coastal areas.

Additionally, there are anonymized data that are the most useful. Their significance arises from the fact that they once contained a specific personal reference that could link them to the identities of specific individuals. However, thanks to numerous technical procedures, they have lost that characteristic and can no longer be associated with the specific individual who had that personal reference. Nevertheless, the usefulness of this data lies in the fact that correct conclusions can be drawn about their behavior based on similar circumstances connecting specific individuals, as it is assumed that individuals in similar life circumstances will behave similarly.

Finally, there are personal data, which are the most sensitive, placing

the artificial intelligence system under the greatest scrutiny in this regard. According to the GDPR, personal data is defined as „any information relating to an identified or identifiable natural person"[15], this includes, for example, names, addresses, genetic characteristics, or identification numbers of an identifiable person. [16] [17] These are data that determine the identity of a specific individual in such a way that their identity is known with certainty, as the personal references that distinguish that person, and no one else, are known. Such data can also be used by artificial intelligence, with the important note, as we previously emphasized, that their use must not in any way compromise the data. In other words, it is essential to ensure the protection of this data during the profiling process, as well as in other processes on which automated data processing is based. More specifically, „personal data thus play a key role in profiling: only access to them allows abstract sets of experiences obtained from abstract comparative data to be transferred to individual cases and thus become usable."[18]

ii. The Second Phase of the Three-Step Model – Profiling

This is the most important phase within the aforementioned three-step model. The essence lies in the necessity to carry out the profiling process based on the data collected in the first phase. The core concept of profiling is to assess personal aspects related to the functioning of an individual based on the collected data and to predict their future behavior according to these parameters. Therefore, to conduct this profiling process, having access to a large volume of data is of fundamental importance. This is because a greater amount

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[15] *Datenschutz-Grundverordnung* Art. 4, Nr. 1, https://dejure.org/gesetze/DSGVO/4.html, the date of access to the s To see: *Opšta uredba 2016/679 o zaštiti fizičkih lica u odnosu na obradu podataka o ličnosti, i o slobodnom kretanju takvih podataka,* čl. 4, st. 1, tač. 4.

[16] *Datenschutz-Grundverordnung* Art. 4, Nr. 1, https://dejure.org/gesetze/DSGVO/4.html, datum pristupa navedenom dokumentu: 24.09.2024.; To see: *Opšta uredba 2016/679 o zaštiti fizičkih lica u odnosu na obradu podataka o ličnosti, i o slobodnom kretanju takvih podataka,* čl. 4, st. 1, tač. 4.

[17] The source served as the basis for the aforementioned presentation: Schönner, K, *Compliance unter Berücksichtigung der neuen DSGVO und national geltender Gesetze,* Mittweida, den 29.11.2019, str 10. The mentioned source can be accessed at: https://monami.hs-mittweida.de/files/12200/ComplianceunterBerksichtigungder.pdf, the date of access to the specified document: 24.09.2024.

[18] Wiedemann, K., Rechtliche Implikationen Profiling-basierter Preispersonalisierung, Munich Studies on Innovation and Competition, 2023, page 44.

of data increases the representativeness of the findings. Namely, the larger the dataset, the higher the chances of successfully predicting an individual's future actions. The focus is exclusively on personal aspects related to the individual. We are all aware that each person's personality is a combination of various factors that have influenced its formation, making the assessment of these personal aspects a highly complex and intricate matter. Especially considering the unpredictability and instability of human nature, as well as the changes in one's desires, aspirations, and ambitions over time. This highlights why this phase receives the most attention.

iii. Third Phase of the Three-Step Model – Decision-Making and Execution

In this phase, the decision-making and execution process is carried out based on the completed profiling procedure. Exclusively automated deci-sion-making is the ability to make decisions using technological means without human participation.[19]. Through numerous examples, the process of automated decision-making can be observed in practice. These examples can be found practically anywhere. Since the introduction of traffic lights and traffic light systems in the 1950s and 1960s, road traffic has been automatically regulated almost everywhere in Europe[20]; Shortly thereafter, the automation of tax systems and social security sys-tems followed, along with automated invoicing of telephone expenses. [21]. However, the complete transfer of the decision-making process to arti-ficial intelligence understandably creates fear and distrust among ma-ny people. These decisions are often diffuse and frequently accompanied by fundamental mistrust in technological progress and a fear of losing human autonomy.[22] Many people, as

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[19] See more about this in: *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679,* 2017, page 7.

[20] Videti: Huber, H., *Das Recht im technischen Zeitalter: Rektoratsrede*, Bern, 1960, str. 12 ; Zeidler, K., *Über die Technisierung der Verwaltung*, Karlsruhe, 1959, page 16.

[21] See more about this in: Ulrich, K., *Elektronische Datenverarbeitungsmaschinen im Recht*, Köln/Berlin 1964, page 189 -190; Simitis, S., *Automation in der Rechtsordnung – Möglichkeiten und Grenzen*, Karlsruhe 1967, page 13., a svoje stavove na istim autorima zasniva i: Thouvenin, F., Früh, A., *Automatisierte Entscheidungen: Grundfragen aus der Perspektive des Privatrechts*, 2020, page 5-6.

[22] See more about this in: Busch, C., *Algorithmic Accountability*, ABIDA Gutachten, 2018, page 65, The mentioned source can be accessed at:

well as certain proponents of such approaches, expect that „machines" will soon rule over „humans" or even wipe them out entirely"[23]. Automated decisions can be based on any type of data, such as: data provided directly by the individuals in question (such as answers to a questionnaire); data observed about individuals (such as location data collected through an application); and derived data, such as a profile of an individual that has already been created (e.g., credit score)[24]. When examining the concept of automated decision-making, „the focus is on the quality, fairness, transparency, and traceability of the decisions made by machines, as well as the issue of accountability for incorrect decisions."[25] which artificial intelligence systems should have.

We have already emphasized that the profiling process must be clearly distinguished from the decision-making and execution process. These are two entirely separate and inherently different procedures, which follow one another. If the profiling process is not properly conducted, one cannot expect to make a correct or accurate decision. This usually occurs as a consequence of two causes. First, that in the initial phase, insufficient amounts of data were collected, or the data were inaccurate, incomplete, or outdated. Second, during the profiling process, the personal aspect was not properly assessed, or individuals showed a tendency to change those aspects over a long period of time, which certainly does not contribute to making an appropriate decision in the specific situation.

Additionally, two very important, yet controversial, questions arise regarding the decision that needs to be made and executed. In this context, does the decision have to be entirely based on the results of the profiling? In other words, is it possible to make

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https://www.abida.de/sites/default/files/ABIDA%20Gutachten%20Algorithmic%20Accountability.pdf, the date of access to the specified document: 24.09.2024.

[23] The following authors, among others, rest on these views: Bostrom, N., *SuperIntelligence*, Oxford, 2014, ili Metzinger, T., *Die mitfühlende Superintelligenz, die Böses schafft*, 2017, The mentioned source can be accessed at: https://www.nzz.ch/feuilleton/die-mitfuehlende-superintelligenz-die-boeses-schafft-ld.1334142, the date of access to the specified document: 24.09.2024.

[24] See more about this in: *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679*, 2017, page 7-8.

[25] See more about this in: Thouve-nin, F., Früh, A., *Automatisierte Entscheidungen: Grundfragen aus der Perspektive des Privatrechts*, page 4.

a decision that is not based on profiling results and still be valid? It is extremely difficult to answer this question, as there are very specific situations in practice that do not allow us to confidently respond either positively or negatively.

For example, if we consider banks and their loan operations, besides profiling, the bank may use other criteria to assess the creditworthiness of a client. This is because there is a significant risk in relying solely on profiling results, given that an individual's financial capability is a relative matter that is subject to change over a longer period, and loans typically involve such extended timeframes. In other words, the bank has every right to apply various criteria to ensure that it grants loans only to those clients it deems creditworthy during the loan repayment period. However, as real-life situations are not uniform, „automated decisions can be made with or without profiling; profiling can take place without automated decision-making."[26]

The second question concerns whether humans, in any way, influence the decision-making and execution process or if it is entirely left to artif-

icial intelligence. In most fields, after the profiling process is completed, decisions are made and executed by artificial intelligence without any human intervention in the decision-making or execution stages. The „three-phase model" is the most commonly used model in profiling and automated personal data processing, as it is, among other things, based on the rules set forth by the General Data Protection Regulation (GDPR) regarding the protection of individuals concerning the processing of personal data and the free movement of such data.

3. Ethics amd accounting The Right of an Individual Not to Be Subject to a Decision Based Solely on Automated Processing

In accordance with the regulations of the international community as well as in accordance with domestic legal regulations in the field of personal data protection, in certain situations, an individual to whom a decision made based on automated processing applies retains the autonomous right to request that it not be applied to them. However, to prevent hindering modernization and auto-

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[26] See more about this in: *Guidelines on Automated individual decision-making*

and Profiling for the purposes of Regulation 2016/679, 2017, page 8.

mation in decision-making processes, all situations in which it is deemed justified for an individual to invoke this right are explicitly enumerated. In this regard, only two situations are cited where the individual possesses the aforementioned right. It seems that the legislator is extremely restrictive regarding the situations in which an individual could find themselves to which the mentioned norm applies. This would be quite acceptable if these two exceptions were not so clumsily formulated.

The first situation essentially implies that the decision produces legal consequences for the individual to whom it pertains. An objection can be made regarding the excessively broad wording of this exception. Legal consequences can vary widely in nature and can pertain to any human activity, so it is unjustifiable to leave this formulation unclear and ambiguous. Secondly, is the quality of the legal consequence affecting the individual significant? The presumption is, but only a presumption, that the individual will invoke this exception only if the decision in question produces negative consequences for them. However, it can always be hypothetically questioned whether the subject has this right even when the decision is positive for

them. Furthermore, can the subject invoke this exception when the decision in question produces legal consequences for individuals with whom they are associated? As can be seen, there are too many questions that the legislator has not answered concerning this exception.

On the other hand, the second exception implies that the decision „significantly affects" the legal status of the individual to whom the decision relates. A critique of this exception can be directed at the provision of a „legal standard" as a type of exception in this case. Legal standards, as is known, due to their indeterminacy and imprecision, should not be included in legal regulations, or should only be included in specially designated circumstances.

However, the legal provisions specify three situations in which it is justified for the subject not to exercise this right, even if the decision in question produces consequences for them or „significantly affects" their position. The first situation exists if the decision in question is necessary to conclude and execute a contract between the individual to whom the decision pertains and the data controller. This exception seems very justified since, without certain personal data, it is inconceivable to proceed with concluding and executing a

contract. However, the term „necessity" should be interpreted restrictively due to the sensitivity of the matter at hand. It must not only be proven that it is necessary, but a way must also be found to minimize the intrusion into the subject's privacy.

The second situation implies that the decision in question is based on the law. We must acknowledge that this exception is not clearly formulated since every decision must be based on a legal provision. The third situation implies that the decision is made based on the written and explicit consent of the individual to whom it pertains, and this exception applies as long as the individual does not revoke their freely given consent. Here, it is necessary to pose the following question: does the revocation have retroactive effects or only for future situations, i.e., situations that arise after the revocation? The relevant acts clearly specify that the revocation only applies going forward and not retroactively, which means that the revocation does not affect the legality of processing personal data up to the moment of revocation. Retroactive revocation would

be impossible and legally unsustainable, as it would conflict with the principle of legal certainty. The roots of these provisions, which were the subject of our interpretation, trace back to the French Data Protection Act of 1978 concerning the processing of data, files, and individual freedoms.[27].

4. The Concept, Characteristics, and Significance of Economic Development

We often encounter the term „economic development." Economic development is a multidimensional and complex process that, in addition to economic growth, encompasses changes in the structure of the economy, as well as changes in resources, institutions, technology, processes, and numerous other changes within the social system.[28]

The concept of economic development can be viewed in relation to two essential facts. First, a state must have the ability to create new wealth and maintain existing wealth over a long period, engaging all

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[27] See more about this in: Mendoza, I., By-grave, L., *The Right not to be Subject to Automated Decisions based on Profiling,* EU Internet Law: Regulation and Enforcement, 2017, page 3., and all in accordance with: *Loi no. 78-17 du 6.*

janvier 1978 relative à l'informatique, aux fichiers et aux libertés, čl. 2.

[28] See more about this in: Mićić, V., *Ekonomski razvoj Republike Srbije determinisan sektorskom strukturom privrede*, Ekonomski horizonti, vol. 19, 2017., page 31.

the productive capacities it possesses. Second, all these processes should positively impact the life and well-being of the citizens within that state. „Economic development is a normative concept that encompasses three key values: (1) mere existence, which includes an increase in the standard of living—growth in per capita income, elimination of absolute poverty, greater employment opportunities, reduction of income inequality, etc.; (2) improvement of self-esteem needs; and (3) freedom, or the right to choose, as well as a greater range of choices."[29]

Based on which indicators can we assume that a certain state is economically developed? One of the first indicators is the state's attitude toward its available resources. In this regard, we can say that economically developed countries make use of almost all available resources for the purpose of economic development, ensuring that there are no unused resources. The second indicator is the stability, consistency, security, continuity, and sustainability of the state's policies toward economic development and overall well-being. Income distribution may not be perfectly even in such countries; in fact, it is questionable whether this can be achieved in any country in the world, aside from a theoretical framework. However, the majority of citizens must enjoy a commendable quality of life and lifestyle, while the state must provide support to materially disadvantaged citizens.

The next indicator is the existence of a developed and efficient state, economic, legal, political, and social order. This means that the independence and effectiveness of all authorities in the power system must be guaranteed. There must be a clear delineation of responsibilities, with no one authority overstepping its bounds in a manner that would hinder the efficiency and rationality of their operations. Additionally, it is crucial that the citizens of such a state are not passive regarding the issues surrounding them. In other words, it is important to encourage activism and the social inclusion of as many citizens as possible in the growth and development of the state, rather than demotivating

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[29] See more about this in: Beg, M., *Održivi ekonomski razvoj – prepreke i rješenja*, Zbornik radova znanstvenog skupa: Modeli razvoja hrvatskog gospodarstva, (ur. Družić, G.; Družić, I., izdavač: Ekonomski fakultet Zagreb; Hrvatska akademija znanosti i umjetnosti), 2018, page 374, and all in accordance with: Todaro, P. M., Smith, S. C., *Economic Development*, 2006, page 19-20.

them from participating in these processes.

Furthermore, there must be a guarantee of legal and economic security. Legal security is reflected in the application of the principles of constitutionality and legality, as well as the principle of prohibition of retroactivity, in order to ensure citizens' confidence in the legal regulations governing social relations. Emphasis is placed on the development of innovations, knowledge, and education, as these are considered the fundamental „drivers" of a state's development. Without these elements, there can be no discussion of any form of progress, especially not economic development and well-being. An important aspect is also the state's openness „to the outside," meaning economic cooperation with as many countries as possible, which regulates the issues of imports and exports as crucial factors in the processes of economic development for any country in the world.30. In this sense, „previous experiences show that foreign investments have played a significant role in changes in production and exports in countries

that have properly utilized foreign sources of financing (Veselinović, Maslovara, 2014)." For this reason, foreign investments significantly contribute to shaping the market of a given country and thus directly influence its economic development. They lead to „the renewal of production, upgrading outdated facilities, establishing new factories, employing workers, and through the process of multiplication, stimulate further economic growth (Đoković, Vasiljević, 2008)."

5. The Reach of Artificial Intelligence in Economic Development: Opportunities, Advantages, and Disadvantages

The aim of this section of the scientific paper is to examine the reach of artificial intelligence in the field of economic development. Given the inevitable existence of a series of advantages as well as a range of disadvantages that artificial intelligence can have in the observed area, the need to adequately elaborate on this issue becomes even more important. In this regard, we will define the opportunities presented by artificial

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30 A list of facts that characterize economic development, and which helped us a lot in the elaboration of the mentioned question, can be found at the link: https://sr.economy-

pedia.com/11039617-economic-development, the date of access to the specified document: 24.09.2024.

intelligence that we anticipate in a future time frame concerning the observed phenomenon.

The advantages of artificial intelligence systems in economic development are numerous and can be seen through several facts. The use of artificial intelligence systems primarily affects the reduction of material costs and enhances the productivity of human resources, as humans are excluded from certain activities that can be performed by computers using machine learning rules, and this is done in a comparably high-quality manner. In other words, the automation of most business activities is achieved, which certainly contributes to a faster and more efficient overall development. When discussing material costs, the artificial intelligence system always identifies the weaknesses of human activities related to economic development planning, allowing for an effective profiling process that reveals where significant savings in costs and other forms of material resources can be made.

Furthermore, the artificial intelligence system is important for monitoring the legality and effectiveness of business processes aimed at economic development. In other words, artificial intelligence can much more easily recognize whether all phases within a business process have been adhered to and whether they are in accordance with applicable legal regulations, thereby preventing numerous consequences that may arise from poor planning and organization of the business process. In this way, the artificial intelligence system achieves a preventive action to either prevent harmful consequences or minimize their impact if they do occur. Additionally, „business owners gain the ability, using Artificial Intelligence, to independently conduct financial analyses and contact appropriate institutions for various forms of financing (Makojević, 2024)." In this case, the use of artificial intelligence contributes to the savings of material and human resources that would otherwise be engaged in finding the best financing solutions.

When we mention the weaknesses of human action concerning business processes, this fact reflects another aspect that can be attributed as an advantage of artificial intelligence. Specifically, through the application of artificial intelligence, it becomes easier to identify weaknesses in human actions, which will simultaneously contribute to greater and better productivity of human resources where they are still necessary. Additionally, through the profiling process and analyzing individuals' preferences, one can predict their future

actions, which is best observed in the fields of trade and the sale of products/services. This treatment improves both the quality of products/services and the quality of their delivery while simultaneously eliminating those products/services from business practice that have not proven particularly attractive, allowing products/services that have garnered interest from subjects to become a fundamental part of the market. This, in turn, encourages even higher quality of products/services, which can be seen as another point in favor of the artificial intelligence system. „The development of Artificial Intelligence enables a new approach to infrastructure development through reduced costs," so „the use of artificial intelligence allows for the development of activities in the absence of traditional infrastructure that requires investments and time for construction (Makojević, 2024)." The primary advantage of artificial intelligence is „the establishment of communication" between humans and machines through active communication, which can lead to solving problems identified in the production process" (Makojević, 2024).

On the other hand, it is evident that the use of artificial intelligence also brings a range of negative aspects and risks. In this regard, the first risk is associated with workforce engagement. Although it is clearly stated that the primary advantage of the concept of artificial intelligence is that it achieves increased quality of the workforce, its engagement simultaneously reduces employment rates. This significantly negatively impacts economic development, as increasing the unemployment rate is one of the most significant „brakes" on economic development. The use of artificial intelligence systems eliminates the need for performing numerous jobs, which negatively reflects on the overall concept of economic development. In this sense, „research conducted by Goldman & Sachs (2023) has shown that nearly two-thirds of jobs are exposed to the impact of Artificial Intelligence and that it will replace a quarter of the workforce in the second decade of the 21st century, meaning that the global economy will face a loss of nearly 300 million jobs due to the influence of Artificial Intelligence" (Makojević, 2024). The application of artificial intelligence will lead to changes in the organizational structure of the economy regarding the organization of production processes and the position of the workforce (Makoević, 2024). We mention this exception among the negatives, as there is no consensus in theory about whether these changes will be po-

sitive or negative, although many opinions lean toward negative changes.

Regarding future expectations from the concept of artificial intelligence, the essence boils down to the necessity of reassessing its relationship with the development of human resources and institutional development in future operations, given that there are numerous dilemmas that need to be addressed in this respect. Moreover, it is essential to work on selecting data that is of crucial importance, as well as on its accuracy, completeness, and timeliness. Furthermore, it is evident that much greater attention must be paid to analyzing personal preferences during profiling procedures, as predicting people's behavior in society heavily relies on this. The number of areas in which human intelligence will be replaced by artificial intelligence must gradually increase, while simultaneously ensuring the protection of human and material resources. In addition, efforts should be made to refine the concept of artificial intelligence to minimize the errors that arise in this regard.

6. Concluding Considerations

The modern era brings with it a different position for the individual, which requires certain adjustments. Such adjustments can carry both advantages and disadvantages, potentially weakening the individual's position, no matter how strong they may believe themselves to be. One of the phenomena surrounding which there are disagreements regarding its nature is certainly the system of artificial intelligence. The fact that problems can be solved without human intervention, solely through the use of computers and artificial intelligence systems employing machine learning algorithms, is quite appealing. Although there are numerous advantages to this concept, there are also significant drawbacks. It is precisely because of these shortcomings, along with the errors that may arise when decisions are made by artificial intelligence, that caution and gradual implementation into real social frameworks are necessary.

While it is highly probable that in most social domains artificial intelligence will perform tasks equally well, if not better, than humans applying their own intelligence, there remain areas where this cannot be confidently assessed. In such a system, the processing of personal data is conducted automatically, completely excluding the human factor. We have highlighted the benefits of automated decisions as well as the subject's right not to be subject to automated decisi-

ons, along with the exceptions to this established rule. As we have noted, this is an area that is still developing, and thus society is expected to seriously „grapple" with all the shortcomings and challenges that the use of the artificial intelligence concept will bring.

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KONCEPT VEŠTAČKE INTELIGENCIJE I NjENI DOMETI U EKONOMSKOM RAZVOJU

Sažetak: Enormni porast i razvoj tehnologije, naročito od početka 21. veka, je uslovio porast broja informacija kojima smo okruženi. Zahvaljujući toj činjenici, stvoren je osnov za delovanje i ubrzani razvoj programa koji su zasnovani na konceptima veštačke inteligencije. Pomenuti programi svoj rad zasnivaju na automatizovanoj obradi, prikupljanju i sistematizaciji podataka bez učešća ljudske aktivnosti u ovim procesima odnosno bez upotrebe ljudske inteligencije. Zbog brzine i efikasnosti takvog načina manipulisanja sa velikim brojem podataka, koncept veštačke inteligencije unosi brojne promene i totalno menja način na koji funkcionišu brojne društvene oblasti. Predmet interesovanja autora će biti ukazivanje na sam značaj i način funkcionisanja koncepta veštačke inteligencije, ukazivanje na prednosti ali i loše strane tog koncepta a sve kroz sagledavanje njegovog uticaja na ekonomski razvoj.

Ključne reči: veštačka inteligencija, podaci o ličnosti, ekonomija, ekonomski razvoj, algoritam