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## A NEW APPROACH TO DECISION- MAKING RESEARCH AND THE KEY ROLE OF THE ORBITOFRONTAL CORTEX

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**Abstract:** *Decision-making is the key factor of every management process, as it affects the further course of events that are to be decided on. In that manner, the human mind is the one making decisions, while influenced by various factors (desires, motives, emotional state of the decision-maker etc.). The key factor, that is responsible for any decision that has been made is the Orbitofrontal Cortex (OFC), located in the frontal part of the human brain. Therefore, by acknowledging the importance of OFC and combining it with what is already known in the field of “predictive analytics”, this paper will deal with the new approach to decision making research. A special reference will be made in a case study, in the field of agricultural science (based in South Srem area), in which it will be shown how some of the farmers’ decisions may lead to potential risks and dangerous situations later on.*

**Key words:** Orbitofrontal Cortex, predictive analytics, decision-making, „Eliot“ case, COVID-19, crisis, agriculture.

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## **1. Introduction**

The human mind, its design, the way it functions, the way it makes decisions and ultimately its manipulation, has always been a fascination for scientists and various experts. Our decision-making is usually influenced by several factors at once, e.g., our desires, motives, emotional state at a given moment, the value system we have adopted, the way we perceive our own ambitions and abilities, our assessment of environmental conditions, etc. And the question of whether to obey intuition or reason was also dealt with by Plato. He compared the functioning of the human mind to a carriage, to a two-wheeler. One horse represented the rational mind, the other the emotional, and the rider is the one who must constantly control them. After all these years, psychologists, philosophers, psychiatrists, neurologists, biologists and others, tried to penetrate the secrets of His Majesty. Of course, Plato's chariot driver depends on both horses, and horses depend on each other. And in that, perhaps, there is a charm, because what would happen if that connection was broken, such as in the 1984 Eliot case.

A part of the brain called the Orbitofrontal Cortex (OFC) is responsible for integrating emotions into the decision-making process. By impairing this part, people have intact cognitive abilities, but their ability to make everyday decisions is significantly reduced. So, Eliot, a happily married young man in his thirties, was an excellent student in college, then, a successful manager in a large corporation, a naturally gifted leader, and so on. Unfortunately, in the 35th year, he was diagnosed with a brain tumor. The operation was successful, but Eliot had bilateral OFC damage. Tests of his intelligence, memory, reading, writing, spatial-visual ability, facial recognition, showed that his performances range from average to superior. But making even the simplest decisions was very difficult for him. The decision to choose a restaurant for dinner would take hours. Shortly after the operation, he was fired, divorced, lost contact with family and friends, lost all his money, married a prostitute, and got divorced after 6 months. Eliot was completely deprived of the emotional influences of the brain and his life turned from ideal to hell. Here is the paradox of OFC: how damage to this area leaves so many cognitive abilities intact, and destroys the ability to make

decisions that guide us through life on a daily basis. And in the future, that enigma remains a task for experts. Our behaviour, habits, attitudes and other data that we leave, someone carefully analyses, constructs a picture of us and based on established patterns, predicts our next step, the next decision we will make.

Everything in the world is connected and if you are looking for connections, you will be able to predict. Wherever you have the opportunity to collect data, to learn from experience, you can predict. Predictive analytics is based on this principle: finding a template from "historical" data is the key to the future. Predictive analytics is used in marketing, medicine, telecommunications, sales, finance, politics, education, but also for any scams. Real-time monitoring lies between two extremes, learning from "historical" information and finding patterns with advanced predictive analytics. Real-time tracking detects events and event patterns as data flows through a transaction system, network, or telecommunications channel. The amount of data we leave on the internet has increased in proportion to the development of the internet and social networking. In addition to business motivation, the abundance of data is another key ingredient for the success of predictive analytics. The data goes through a modelling process and the model it predicts is ready for action. Many perceive the data as annoying piles of zeros and ones, but they are for high-tech miners, gold ore. So, to summarize the term predictive analytics: the terms are extracted from the data and used in the modelling process; combining someone's attitudes (behaviours) with some attributes (demographic) increases the accuracy of the created models.



*Picture 1. Creating a model*

Programming language R. Very simple, but has huge potential. A language that transcends the borders of all countries, the universal

language of a large number of world companies. Some of the users are Google, Bank of America, Stanford University. In addition to being easy to use and flexible, it is also an open source project. The designers of this miracle are gentlemen professors of statistics from Auckland University, Ross Ihaka and Robert Gentleman. Another interesting tool used by predictive analytics is IBM's SPSS Modeller. The data he uses can be structured (age, gender, marital status, income ...) or unstructured (user notes, call centre calls, content of posts on social networks, etc. From the huge amount of data, the given concepts are extracted. , are a very powerful weapon of companies in the fight for profit. Of course, the word profit is masked by caring about customers, their needs, their satisfaction, well-being, etc. Or e.g. Watson Explorer which provides the ability to answer in real time how and why something happened using advanced cognitive neural network services, text and sentiment analysis. Such a tool is great in the context of Customer 360 views, because it interactively predicts which product the user will buy next.

## **2. An Interesting example - the Black Swan Phenomenon**

An urban legend - men who buy diapers in supermarkets, buy beer, in fact, it is not. This is determined on the basis of credit card data that were used when shopping in supermarkets. Another example, based on an analysis of supermarket purchases and credit card payments, provided an answer to the question of how risky a person is in terms of repaying a loan installment. Some of the conclusions are:

- People who buy car oil from non-reputable manufacturers and at a lower price, compared to those who buy branded oil, more often fail to pay the loan installment.

- People who buy self-adhesive pillows as protection so that the chair does not scratch the floor, rarely fail to pay the installment.

Prediction is always better than guessing. And all actions stem from predictions about one person. And that is not the end of the game, because success is not only predicting someone's behaviour in the future, but also influencing it. The man is surrounded by organizations that analyse him. Financial institutions advise, on a daily basis, where and how to invest money, companies

offer a percentage of sales for certain services and products, insurance companies and health insurance are trying to identify possible diseases in a timely manner and offer adequate treatment and cure.

Amazon, for example, will send a pair of sneakers of a certain colour and number to the nearest warehouse even before we confirm the order with the click of a mouse.

Powerful software and tireless prediction algorithms are no longer scenes of Spielberg's sci-fi film "Redundant Report" in which they are used to prevent crime. Police in Memphis, Los Angeles, Great Britain and Poland have a very serious approach to analysis of this kind. The behaviour of criminals can also be reduced to models. Mark Cleverley, an analyst at IBM, which works with police in London, Poland and several US and Canadian cities, explained that it is possible to establish a model of behaviour based on several factors such as weather, whether the day is when salaries are paid. It does not mean that some crime will happen at a certain time and place, it cannot be predicted, but it can tell us, for example, that a wave of car theft is expected. That is how the police can react, because they are in the right place and at the right time. In Memphis, authorities claim that the crime rate has dropped by 30 percent since the police used the predictive analysis program designed by IBM. A program called CRUSH allows the police to identify individual dangerous areas in order to better deploy people in the field.

These, and any similar examples, raise the following questions for controversy: To what extent does the use of predictive analysis please the privacy of citizens and their constitutionally guaranteed protection? And another question: Can we rely on observation-based learning or experience and the fragility of our knowledge, looking for a pattern and expecting the future to follow?

Although it is in the nature of people to attach importance to the experience of past events, looking for a pattern and expecting the future to follow it, human history is usually shaped by the strong influence of events for which history could not give us a guide. The author Nasim Nikolas Taleb, who started his career as a stockbroker, and encouraged by the acquired experience, opted for scientific work, is one of the most active financial mathematicians, researchers in the field of probability and chance, and whose scope of study

includes the epistemology of chance. to answer the question of how to live in a world we do not understand enough. Taleb's concept of the Black Swan, an unpredictable event with great consequences, described in the book of the same name, is an original contribution to the theory of complex systems. Using the term Black Swan, he talks about phenomena that he considers to be completely unexpected, but which still bring tectonic changes on a global scale. The Black Swan is a reference to the famous philosophical thought experiment from the 17th century. Until then, no one in Europe had seen swans other than white, so the claim: "All swans are white" was often used as an example of undeniable truth. The chance of finding a black swan was considered to be zero, until it happened in 1697.in Australia. It was clear that based on previous experience, their alleged non-existence could not be proven. Similar predictions applied to the terrorist attacks of September 11, 2001 in America, to the famous Maginot Line, the supposedly insurmountable bulwark of French defence in World War II that German troops simply bypassed, to the expansion of the Internet, to the emergence of Google, to the collapse of world stock exchange in autumn 2008 etc.

A small number of Black Swans explain almost everything in our world, from the rise of ideas and religions, the dynamics of historical events, to important events in our private lives. Their influence strengthened especially during the industrial revolution, when the world was becoming more complex. Transient trends, epidemics, fashion, ideas, new artistic directions and schools - all this follows the dynamics of the Black Swans. Precisely because of the combination of low predictability and huge influence, they represent a great puzzle. The central idea of Taleb's book is that we are blind to coincidence, especially to large deviations. It is easy to determine that life is the cumulative outcome of several significant earthquakes, if we only consider our own lives. Let's take into account the significant events, technological changes, and inventions that have occurred in our environment since we were born and compare it all to what was expected before they happened. How many were foreseen? Or say, choosing a profession, finding a partner, relocating, unexpected gains or losses. How often did these things go according to plan? Given the share of extraordinary events in historical dynamics, the inability to predict the extraordinary

implies the inability to predict the course of history - Taleb concluded. But we still act as if we are able to predict everything and as if we are able to change the course of history. We are making multi-year projections of the social security deficit or oil prices, for example, and we are not aware that we cannot even claim what will happen next summer. We live in a world where there is more and more feedback. They cause events, which cause new events, thus triggering avalanches and unpredictable planetary outcomes. So, can we assess how dangerous a criminal is based on what he does during an "ordinary" day? Can we study health without knowing the deadly diseases and epidemics? Can we believe the methods of inference by means of a bell curve, and at the same time know that it neglects large deviations?

### **3. Privacy and predictive analytics**

The time of global networks and information opens a strategic issue of security and privacy of a country and all its individuals. According to media reports, the American agency NSA (National Security Agency) currently monitors the largest part of telecommunication traffic and collects data that are stored in the world's largest data centre, in the American state of Utah. Something similar is done by the French agency "French", "Onyx" from Switzerland, etc.

A huge amount of data from a politically "interesting" country, for example, is in-depth analysed and a virtual scenario is projected, in order to play the appropriate moves of global planners and controllers of the cyber galaxy. By following the global network, videos, Facebook, Twitter, various reports, profiles of politicians are created, which should be paid attention to or influenced in order to satisfy certain strategic interests.

If such "powerful" people and states cannot defend and protect themselves, what should ordinary mortals expect? From domainers, trolls, bots, hackers, haters, spin doctors, to polished and reputable companies that subtly place ads, various unethical phenomena that lurk and follow every click, you need to save your life. Every click, every like represents information, which is stored in a hundred places at the same time. Recorded is a social network or

site that we visited, but I also read through other companies that download data from those internet sites. World research shows that people perceive content on the Internet as free. Data show that only about 10 percent of people who use smartphones think they have bought the apps they use. In Serbia, that number would probably be 0.01 percent. So, we perceive this huge database of knowledge and information, which is searchable, classified and accessible - as completely free. This information has its value expressed in money. The more specific the data, the more it is worth. A thousand basic data - name, surname, address, etc., are worth, say, a few cents; that person's marital or health status will double the amount, which only grows further by crossing with different information about income, consumer habits, and so on. Sites like Amazon and Google make about a thousand dollars a second.

Thanks to technological development, society is on the threshold of another new paradigm - "internet of things", the networking of various devices that we use. New generations of pacemakers, refrigerators, traffic regulation systems, and even street garbage cans are being connected to the network. We absolutely do not have to pay for the online presence with money, we pay for it with personal data. There is no controversy, online privacy - an impossible mission.

#### **4. Crisis management and communication problem**

Crisis communication is defined as the perception of an unpredictable event that threatens to jeopardize the significant expectations that the company's stakeholders have and that can seriously affect the performance of the organization and create an undesirable outcome (Timothy, Coombs, 2012, 186). The communication process between sender and receiver in the rhetorical arena during crisis communication contains three elements, crisis communication, sender and receiver. The main sender is the company, i.e. its representatives. The crisis team defines those responsible for internal and external communication, as well as spokespersons with the authority to address the public.

The primary group that represents the recipient in the communication process are always the victims. In addition to the



victims, there are four other types of public, ie stakeholders with whom a relationship is established through communication in a crisis: formative (enabling), functional, normative and diffuse public. The formative public provides authority and control over the resources that enable the organization to exist at all, and these are owners, shareholders, boards of directors, regulatory agencies, and the like (Ten, 1999, 49). Functional audiences provide the basic operational functioning of organizations and include employees, suppliers and customers. Normative publics are broader groups to which a company or employee belongs, and which have the power to represent their interests, for example trade unions, political groups and professional associations. Diffuse publics are the external public, the local community, the media, civil society organizations and citizens.

Crisis communication is a specific form of communication, and one of the typologies divides it into four main forms of communication among crisis participants: public relations, problem management, community relations, and media relations (Matthew, et al., 2003, 19). On the other hand, relations with the media are more often conducted as one of the segments of public relations, both in terms of subject and formation, and therefore in the organizational sense within companies. Public relations that can be used in a crisis therefore includes, in addition to media relations, internal communication, social responsibility programs, and specific communication of leaders to the community. In this way, in this paper we will look at media relations, as part of a broader area of public relations.

The policy of working with the media during crisis management implies internal and external communication. In addition to teams and information centres that communicate directly with the external public, listening to questions and answering them, a similar team must have the function of coordinator between that centre and the staff and the organization. Employees demand information just as much as the external public, and their situation is further aggravated by feelings of fear and uncertainty. In such circumstances, rumours develop, come from employees, and they threaten to fill the communication vacuum that usually occurs immediately after the outbreak of the crisis. As a rule, sources of

information for the media are employees who leave the factory premises or company buildings, as well as employees who may have witnessed the event. In this way, the media fit the messages from the company's management and employees, striving to achieve a balance in providing information.

## **5. Communication parameters in crisis processes**

The interest of the media in the crisis appears very early and it is necessary to set a certain tone of the company's communication (Sally, 1999, 53). The tone should be in line with the crisis communication plan that the company already has. Organizations can choose one of two approaches in media relations. The first approach is assertive and proactive, which allows the organization to be the first to publish the news about the crisis, without waiting for someone to "report" it to the public and the media, nor to hide it and wait for it to go unnoticed. In that way, he has the opportunity to present his version, trying to tell the story precisely. The second approach is reactive and delays unavoidable events with the risk that the company version will be published incorrectly. Ignoring the situation only makes things worse. A proactive approach gives the company the opportunity to set the tone of communication that is in line with the situation, and which it has anticipated and occupied.

In the pre-crisis period, practice has shown that it is necessary to make preparations for a possible crisis. Companies should, in regular circumstances, outside the crisis, set their official communication policy and rules for working with the media. Such a plan is made as part of the management of the entire business process and stakeholders of the company, which lays the foundation for work even in crisis situations.

Preparation for the crisis includes conducting business risk analysis, anticipating crises in all segments, prioritizing crisis situations, anticipating the public at risk, formulating communication strategies and tactics, determining relevant communication channels to stakeholders, anticipating media interest, preparing a crisis management plan, defining procedures, appointing a team and training its members for adequate roles, appointing and training a spokesperson to present to the public and prepare a communication

centre. The made plan should be practiced and tested through it, and as a consequence it should be updated and supplemented. Directors, managers and other members of the crisis team, and not just communication experts, should ideally be trained and trained to work with the media, which is especially true for crisis situations.

In larger organizations, communication professionals, along with the legal department and the operations sector, are given shared responsibility for crisis planning. It is their responsibility to create, maintain, manage and communicate a crisis management plan. This plan should include special media training for spokespersons during the crisis, as well as the establishment and maintenance of internal and external channels of communication and the development of contingent responses and messages for the presumed crisis scenario.

Crisis communication, by definition, takes place well before the crisis itself, and that is the period when the organization gets to know the work with the relevant media and has good relations. During the preparation period, it is necessary to get acquainted with the way each media works, as well as understanding how the organization is seen from the outside, what reputation and media image it already has, as well as planning to avoid the media chaos that most often occurs. The goal of crisis communication in the pre-crisis period is to build relationships of mutual trust with the media. Given that the power of the media is such that they can improve or worsen the company's image and affect business, the public relations department is expected to have adequate knowledge of the functioning of different types of media, work technology, genre they cover, reporting context, editorial preferences, overt and covert political or ownership interests. This means knowing how to prepare the content that the media expect, how to meet the deadlines, how to meet their requirements and attract their audience in a way that suits both the media and the company.

## **6. Crisis communication in the period of the COVID 19 pandemic with a review of security aspects**

The COVID 19 pandemic can already be called the greatest catastrophe that could have befallen humanity (Dašić, Dašić, 2021). The silent killer, who is not visible to the naked eye, since it is

difficult to protect himself and find an adequate measure of prevention already now, after less than a year, has taken over a million lives, and currently over fifty million people are sick. All the world's resources are engaged precisely with the goal of opposing this terrible and cruel enemy and finding a cure that would save the health and lives of people on the planet.

However, as the entire social, political, economic, economic and other segments of life must adapt to the new circumstances due to the pandemic, so do crime, as well as the activities of criminal groups adapt to new circumstances. In the paper itself, new ways of committing certain crimes are presented, by using certain benefits, created as forced solutions due to the pandemic. On the other hand, there are traditional crimes, current in all historical epochs, present from the beginning of humanity until today. This crime and the ways of their execution have not changed, but we can talk about their increase. The reason for this should be sought in specific social, economic, but also health reasons, provoked by the difficult world situation, due to the COVID epidemic 19 (Brković, Antonović, 2020, 68-69).

The motives for committing crimes during the pandemic have not changed significantly. There have been significant changes in the circumstances that precede the commission of an illegal act, as well as in the way of social reaction to them, because all events in nation states, as well as globally, are subject to the pandemic and consequences of COVID 19, which happened on the night between March 20 and 21, 2020 in New Belgrade, when six apartments in a multi-storey building burned down. On that occasion, six people died, while six passed away with serious, life-threatening injuries. As this event overlapped with the beginning of the pandemic in Serbia, the public, which otherwise reacts very violently to such news, completely turned a deaf ear to this tragedy, because the focus of interest was on the pandemic. Even the media briefly informed about this fire, of unprecedented proportions in Belgrade recently.

Precisely in such a mental and spiritual state, the public at the global level is not ready to react to any events that are not directly related to the COVID 19 pandemic. International institutions are no longer on them, but on saving the lives and health of the world's population. Difficulty moving, communication, burdening the

public with health problems, decreased attention and permanent fatigue, are favorable circumstances that have contributed to the acceleration of crime and criminal activities.

Finally, it is necessary to look back at the tragic events which, despite the occupation by the COVID 19 epidemic, disturbed the world public. These are intensive terrorist activities on the territory of Europe, specifically France and Austria. The world public was shocked by the degree of audacity and ruthlessness of terrorists who were encouraged in the circumstances when their concentration was focused on the world health crisis, and they chose the most ruthless methods to deal with their so-called rivals. These terrorist methods are reflected in the reckless liquidation of innocent people, in a way that only disgust can cause a normal person, and that is beheading in a public place, on the street and in a church.

## **7. Crisis in the field of economy and economy in the period of the COVID pandemic 19**

The introduction of the state of emergency in the Republic of Serbia was necessary and conditioned by the objective danger to human lives. The state of emergency has completely paralyzed life in Serbia. Everything was subordinated to the fight against COVID 19 and all resources were directed in that direction. The biggest loser in that constellation is the economy and economic entities. The possibility of orderly business was called into question, and the first to be hit were caterers, the tourism sector, the services sector, foreign trade companies, as well as many others. Therefore, it was obvious that in addition to strengthening health care, which was done by renovating hospitals and providing respirators, help and support must also be given to the economy.

The goal of the Government of the Republic of Serbia during the pandemic was to preserve every job. Employers are encouraged not to terminate employment contracts at this difficult time and to help them avoid doing so. To that end, the government provided a package of measures worth 5.1 billion euros, which it intended to support the economy and economic entities. The priority of the Government is the private sector, and this support was primarily intended for entities operating in the private sector. The assistance

was aimed at preserving liquidity in business. The program of measures to reduce the negative effects of the pandemic is reflected in the postponement of payment of payroll taxes and contributions of employees in the private sector during the state of emergency, with the possibility of later repayment, postponement of advance tax payments in the second quarter, exemption of donors from VAT. Micro, small and medium enterprises in the private sector were paid assistance in the amount of the minimum wage for three months, as well as payments of direct assistance to large enterprises in the private sector in the amount of 50% of the average salary in the Republic of Serbia for those employees whose employment was terminated.

In addition to the above measures, the liquidity of the private sector is also provided through the program of financial support to the economy in the period COVID 19, the scheme of support to the economy during the crisis is guaranteed, a moratorium on dividend payments is introduced until the end of the current year and fiscal stimulus is provided through direct assistance to all adult citizens of Serbia.

These measures adopted by the Government are not subject to private sector entities whose income was reduced by more than 10% during the pandemic period, not including costs related to fixed-term employees whose contract expired in that period, as well as entities who stopped performing their activities before the introduction of the state of emergency, i.e. before March 15, 2020.

The measures of the Government of the Republic of Serbia can be divided into four sets. The first set refers to the possibility of postponing due tax liabilities, with the possibility of later repayments in monthly installments. It also enables the provision of liquidity of economic entities, while maintaining economic activity and employment levels. Employers who opt for this measure have the option to defer payment of costs for up to 24 months, without charging interest. Also, this set of measures includes the postponement of the payment of advance income tax in the second quarter, which also increases the liquidity of economic entities. Business entities that have the status of donors will enjoy special privileges, in terms of exemption from VAT. The condition for the application of this relief is that the economic entity has

donated the products it works with to the institutions that primarily work on the suppression of the pandemic.

The second set of measures includes those measures that are given directly to private sector companies. Assistance is provided to small, micro and medium enterprises from the private sector in the amount of the minimum wage, i.e. the amount of 50% of the minimum wage for large enterprises. This measure is applied in accordance with the financial power of economic entities, more precisely, large and financially stronger companies are given 50% of the minimum wage, while entrepreneurs, micro, small and medium enterprises are given the full amount of the minimum wage.

The third set includes two measures of the Government of the Republic of Serbia. It is a program for granting loans to preserve liquidity and working capital for companies from the segment of businessmen, micro, small and medium enterprises, agricultural farms through commercial banks operating in our country. Also, in addition to the above, guarantee schemes are provided to support the economy during the pandemic to maintain liquidity and working capital from the segment of businessmen, micro, small and medium enterprises, agricultural farms through commercial banks operating in the Republic of Serbia.

The fourth set of measures refers to the payment of direct aid in the amount of 100 euros in dinar equivalent to all adult citizens of the Republic of Serbia.

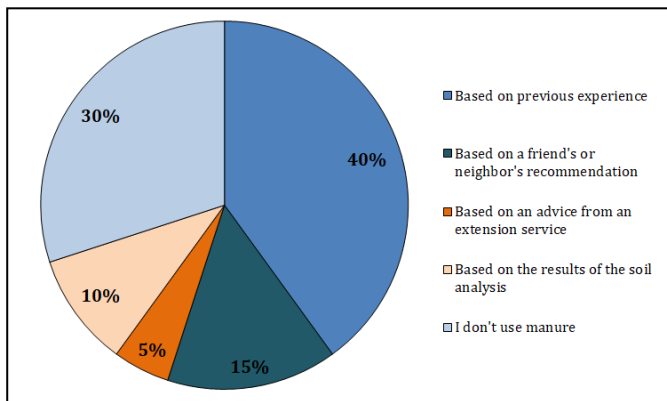
## **8. Decision-making on the problem of South Srems's agricultural waste – Case study**

Waste issue is one of the most common issues nowadays. In the field of agriculture and agricultural production, various kinds of waste might be generated, depending on the process itself. This case study is based on the waste coming directly from basic agricultural production – either crop (plant) production, or animal livestock breeding.

As the part that Orbitofrontal Cortex plays in our everyday lives is significant, it affects decision making both on an individual, but also on a wider level. In that manner, people sometimes, even, value their habits and experience over an expert's advice. Such

behavior is highly present in Serbia's agriculture nowadays, as such a thing has been noticed in the recent research, conducted in November 2021, on the territory of South Srem area (Graph 1). This research involved a survey, targeting farmers of this area (in rural and suburban areas) and their practices in managing agricultural waste (originating from plant production or livestock breeding). Overall, forty farmers were asked to fill the survey – 20 originating from a suburban area (either Batajnica or Dobanovci) and 20 from a rural area (Karlovci or Simanovci). Every decision to answer this survey in a way, has also, been a result of some farmer's Orbitofrontal Cortex "at work".

*Graph 1. Dispersion of farmers of South Srem, based on how they determine the required amount of manure for fertilization.*



*Source: Authors' illustration, based on the survey results.*

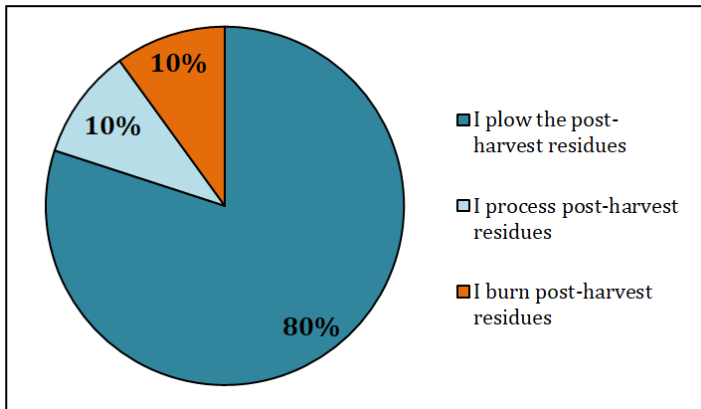
As the results of the survey conducted on both suburban and rural areas of South Srem have shown, farmers in Serbia mainly rely on their previous experience, or advice of people they trust. A "climate of mistrust" is highly present between farmers and employees of any extension service, which might lead to many risks later on. Misuse of manure and incorrect quantification may lead to serious pollution risks, as manure can pollute both surface and subterranean waters. Therefore, decisions made by a farmer's



Orbitofrontal Cortex may have a large impact on a wider health issue and environment issue.

Furthermore, people's decisions may, sometimes, lead to breaking the law or similar actions. Although sometimes people's decisions are made "subconsciously", other times, they willingly make decisions that may be a risk for them, their surroundings, the environment etc. Agricultural practices and farmer's actions in South Srem area can also be used as an example of such situations, in which various factors (moral values, money or other material factors, previous experience etc.) may lead to these practices (Graph 2).

*Graph 2. Dispersion of farmers of South Srem, based on how they use post-harvest residues.*

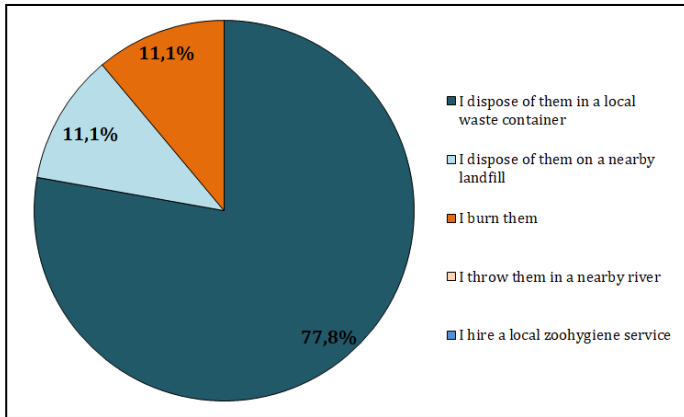


*Source: Authors' illustration, based on the survey results.*

Although the majority of farmers in South Srem area either plow their post-harvest residues (which can be used as a type of vegetable fertilizer), or process them in order to make silage for livestock, the amount of 10% of the respondents said that they burn their post-harvest residues. That means that they have, although illegally, decided to create a large risk for the environment – regardless of the fact that the (Službeni Glasnik RS) Serbian law on agricultural land explicitly prohibits burning these types of residues, as well as any other agricultural residue.

As agricultural residue can also come from livestock breeding, people's decisions in manipulating these kinds of waste are also important in a wider sense (**Graph 3**).

*Graph 3. Dispersion of farmers of South Srem, based on how they use post-harvest residues.*



*Source: Authors' illustration, based on the survey results.*

As stated above, the majority of farmers dispose of animal corpses, residue organs or similar biological waste, in a local waste container. This is an alarming indicator, as none of these farmers stated that they hire a zoohygiene service, although, again, they are (Službeni Glasnik RS) obligated to do so. Once again, due to, most likely, experience or some other strong factor, these farmers' OFC made a decision not to follow the law and risk both their health, as well as the health of other people in the area, as inadequate disposal of biological may lead to an outbreak of various diseases. Combined with the current COVID 19 pandemic outbreak, these diseases would mean even more problems and potential ban of any food production, at least in the outbreak area. As Vojvodina, and, therefore, South Srem, is one of the leading parts of Serbia in the field food production and agriculture, this would mean serious economic, environmental and health problems combined.

## 9. Conclusion

The issue of crisis communication and decision-making became especially relevant during the crisis, caused by the COVID 19 pandemic, which represents one of the greatest world threats since the Second World War. Communication between the subjects is of crucial importance, the exchange of information, data, as well as knowledge, have proven to be crucial. As this is a global threat, it is mandatory that people all over the world find a way to communicate well and make decisions that are not going to pose threats to anyone, meaning that the crucial strategic interest is to maintain order and peace within the limits deemed necessary. With that in mind, as well as knowing that all economies have been more or less affected by the COVID 19 pandemic, the future of these individual economies lies in the hands of the decisions made as the pandemic goes on. Serbian agriculture, has, as authors Cvijanović and Pantić stated, despite all its shortcomings, been able to provide food security for its population and to provide sufficient quantities of agricultural products for export to any country interested in Serbia's food products. In order to maintain this positive balance, it is mandatory to constantly monitor the decisions being made in this field, no matter how small. As stated in this paper, some single farmer's wrong decision may affect the whole region's production in a very short time.

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## **ISTRAŽIVANJE PROCESA DONOŠENJA ODLUKA I KLJUČNA ULOGA ORBITOFRONTALNOG KORTEKSA - NOVI PRISTUP**

**Sažetak:** Proces donošenja odluka je, zbog svog značajnog uticaja na dalji tok događaja, ključna karika svakog procesa upravljanja. Shodno tome, ljudski um je odgovoran za donošenje svih ključnih odluka, pri čemu konstantno trpi uticaj različitih faktora (želje, motivi, emotivno stanje donosioca odluka itd.). Ključni faktor, odgovoran za svaku odluku koja biva donesena, jeste Orbitofrontalni Korteks, smešten u prednjem delu čovekovog mozga. Uvidom u značaj Orbitofrontalnog Korteksa i korišćenjem poznatog znanja u oblasti „prediktivne analitike“, ovaj rad bavi se novim pristupom u istraživanju procesa donošenja odluka. Poseban osvrt biće načinjen u okviru studije slučaja u sferi poljoprivrede (sprovedenoj na teritoriji Donjeg Srema), u kojoj će biti prikazano kako odluke pojedinih poljoprivrednika mogu dovesti do mogućih rizičnih i opasnih scenarija u budućnosti.

**Ključne reči:** Orbitofrontalni Korteks, prediktivna analitika, donošenje odluka, „Eliot“slučaj, COVID-19, kriza, poljoprivreda.

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