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ADVANCES IN BEHAVIOURAL ECONOMICS: HOW TO UNDERSTAND AND IMPROVE DECISION-MAKING PROCESSES

The article is a conceptual work based on behavioural and evolutionary economics achievements. The aim of this article is to present the latest concepts and research achievements in behavioral economics, to help understand economic decision-making processes, and to suggest methods and procedures for improving them. The article presents the theoretical foundations of behavioral economics, based on literature studies and key concepts: intuition and cognitive biases, affective traits, reciprocity, trust and justice. Intuition and emotions are not the opposite of rationality but a reflection of the evolution of rationality. Neuroscience research strengthens the evolution theory of rationality development. Neuroscience has the potential to explain the mental processes involved in emotions, cognition, judgment and decision making. The second part presents a discussion on improving decision-making processes, taking into account the achievements of behavioural economics.

Keywords: cognitive biases, decision-making, emotions, intuition, heuristic, evolution, rationality, reciprocity, neuroscience

Tab. – 1, Ref. – 55

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РОЗВИТОК ПОВЕДІНКОВОЇ ЕКОНОМІКИ: ЯК РОЗУМІТИ ТА ВДОСКОНАЛЮВАТИ ПРОЦЕСИ ПРИЙНЯТТЯ РІШЕНЬ

Стаття є концептуальною роботою, що ґрунтується на досягненнях поведінкової та еволюційної економіки. Мета статті — представити новітні концепції та результати досліджень у галузі поведінкової економіки, допомогти зрозуміти процеси прийняття економічних рішень, а також запропонувати методи та процедури для їхнього вдосконалення. У статті викладено теоретичні основи поведінкової економіки, що базуються на огляді літератури та ключових поняттях: інтуїція та когнітивні упередження, афективні риси, взаємність, довіра та справедливість. Інтуїція та емоції не є протилежністю раціональності, а відображенням еволюції раціональності. Дослідження в галузі нейронауки підкріплюють еволюційну теорію розвитку раціональності. Нейронаука має потенціал для пояснення психічних процесів, пов'язаних з емоціями, когнітивними процесами, судженнями та прийняттям рішень. У другій частині представлено обговорення щодо вдосконалення процесів прийняття рішень з урахуванням досягнень поведінкової економіки.

Ключові слова: когнітивні упередження, прийняття рішень, емоції, інтуїція, евристика, еволюція, раціональність, взаємність, нейронаука

Табл. -1, літ. – 55

Problem statement. Insights from behavioral economics have been used to explain bad managerial decisions in the business world, and bad investment decision making in particular. Decision-making processes are mental in nature. The brain is a particular organ. As scientists uncover more of its inner workings through brain-mapping techniques, our understanding of its astonishing abilities increases. But the brain isn't the rational calculating machine. Over the millennia of its evolution, it has developed shortcuts, simplifications, biases, and basic bad habits. Some of them may have helped early humans survive during the hunter-gatherer era, but they create problems for us today. Equally, some of the brain's flaws may result from education and socialization rather than nature. But whatever the root cause, the brain can be a deceptive guide for rational decision making. These implications of brain imperfections have been rigorously studied by psychologists, and especially behavioral economists, who have discovered that the assumption underlying modern economics—that humans are fully rational economic decision-makers—is not supported by the evidence. Because most theories underpinning business strategy stem from the rational world of microeconomics, all managers should be concerned with identifying cognitive biases and developing procedures to avoid their negative impact on decision-making.

Analysis of recent research and publications. The cornerstone of behavioural economics is considered to be the articles of two American psychologists: Tversky A. and Kahneman D. Their concepts did not appear by chance. They grew on the wave of many works of psychologists dealing with the problems of decision-making initiated in the 1960s. In just three decades the new behavioural economics has achieved significant results, both empirically and theoretically. The main followers of this trend were: Thaler R.H., Slovik P., Akerlof G.A., Shiller R.J., Julmi Ch., Hayashi A.M., Mintzberg H., Abatecola G., Cristofaro M., Giannetti F., Kask, J., Kolm, S.-C., Smith V.L., Fehr E., Gächter S., Henrich J., Boyd R., Bowles S., Camerer C., Fehr E., Gintis H., McElreath R., Trąpczyński P., Zaks O., Polowczyk J., Knetsch J.L., Fischbacher U., Kosfeld M., Zak P.J., Borja K., Matzner W.T., Kurzban R., Lovallo D., Klein G., Simon H.A., Sibony O. More popular works addressed primarily to managers were also used written by Ariely D., Finkelstein S., Whitehead J., Campbell A., Mauboussin M.J., Dobelli R.

Formulation of the article's objectives. The aim of this article is to present the latest concepts and research achievements in behavioral economics, to help understand economic decision-making processes, and to suggest methods and procedures for improving them.

Main text of investigation. Kahneman and Tversky [1] [2] [3] did not reject the assumptions of traditional economics about the rationality of behaviour but treated them as a starting point for studying deviations of real behaviour from this pattern. They strived to construct economic models of human thinking and behaviour that draw on the achievements of psychology and are more realistic and take into account the shortcomings of human rationality. Presenting experimental results that challenged conventional economic theories about decision making they proposed an alternative theory based on psychological hypotheses. Kahneman and Tversky studied the psychology of intuitive heuristics of judgment and risky choices. In all these areas they studied intuition - thoughts and preferences that arise in the brain without much reflection, almost automatically. The human mind has limited ability to perceive, collect and process information coming from the environment. Heuristics provide quick, suboptimal prompts in conditions of time or cognitive constraints. There is a lively debate as to whether these heuristics should be called irrational if they are well adapted to matters of everyday judgment. In their early work Kahneman, Tversky, and others treated cognitive deviations as akin to errors in speaking, forgetting or optical illusions. These are systematic errors that are useful in understanding how the human brain works. Over time the emphasis shifted from heuristics to cognitive biases.

For a long time intuition was opposed to rational processes. The distinction between "rational" and "irrational" human thinking can be traced back to Aristotle. In management studies Barnard [4] similarly distinguished two modes of thinking: logical and illogical (intuitive).

The most important strategic decisions, including investment ones, are usually more intuitive than analytical. Documents such as market forecasts, reports of external agencies on market shares, or even internal financial analyzes of the profitability of the project only aid in making decisions. They are tools in the decision-making process necessary to enrich the CEO's knowledge. Each financial plan is based to a greater or lesser extent on subjective assumptions.

In previous studies it was believed that the decision-making process based on intuition produces worse results than the rational one [5]. In recent years more and more authors have found that for certain decision-makers, for a certain group of issues, under certain specific conditions, intuition can be as good or even better than detailed analysis [6]. An intuition-based decision-making system and an analytical system can complement each other. Effective managers make decisions by combining both approaches [7].

J. Welch the famous former CEO of General Electric did not refer to behavioural concepts, but many of his observations are an important illustration of them. The book "Straight from the Gut" [8] can confirm this. The title „gut” is a symbol of intuitive skills in making strategic decisions. Nine years later McKinsey Quarterly hosted a discussion with the participation of Nobel Prize winner Kahneman and psychologist Klein [9] under the meaningful title "Strategic decisions: when can you trust your gut?". Welch's views were also used by Akerlof and Shiller in the book "Animal Spirits" [10].

The precursor of research on intuition was H.A.Simon [11] the author of the concept of bounded rationality. Intuition is its manifestation. Gradually the view that intuition is a mystical and therefore unscientific perspective of cognition is giving way to research in the areas of psychology and management which explain intuition through a wide range of phenomena including heuristics, expert knowledge and unconscious information processes. It is necessary to focus research on cases where intuition is used effectively. Intuition is most often talked about in the context of time pressure. Using intuition saves time, speeds up decision making, often at the expense of accuracy.

Dane and Pratt [12], based on the latest findings of psychology and decision-making science, believe that under certain conditions intuition can significantly improve and increase the effectiveness of decision-making in organizations. Synthesizing different views, they described intuition as a process: unconscious, involving holistic associations, fast and giving results loaded with emotions. Thus intuitions are emotionally laden judgments arising in rapid, unconscious and holistic associations. Intuition is more effective in complex decision situations because the amount of information is too huge to be processed deliberately, but can be processed unconsciously [13].

Kahneman [14] [15] introduced the dual process concept regarding two types of information processing in the human brain. The primary "system one" of processing involves automatic, effortless processes and learning from experience without conscious attention. The greater part of human life is based on these processes. Intuition is closely related to these processes. The second "system two" of information processing enables people to consciously know and learn, as well as to conduct analysis in a systematic way. This information processing system uses rational decision-making models that have dominated research on decision-making processes in management.

Research shows that executives routinely rely on intuition when they need to solve complex problems. The general consensus is that the higher the management level, the more managers rely on intuition [16]. The specificity of strategic decisions requires it (strategic

planning, mergers, organizational changes, marketing, human resources, research on new products, etc.). Most of these decisions are one-time and unique. Controlled experiments are not possible in such cases [17].

Behavioural aspects emerged in the early stages of strategic management development. Lawrence and Lorsch [18] as well as Anderson and Paine [19] drew attention to the need to study the cognitive processes of the main strategists in enterprises. Individual subjective factors affect the perception of the organization and the environment and as a result - the formulation of the strategy. An important and practical aspect of strategic leadership is understanding how board members make decisions and how that impacts performance. Mintzberg [20] was a pioneer of such research based on observations.

The cornerstone of contemporary discussions on decision-making processes is Simon's theory of bounded rationality [21] [22] according to which decision-makers must construct simplified mental models when dealing with complex problems. Therefore by not being able to consider all relevant variables they may be susceptible to selective perception. In addition if strategic decisions are made collectively they may be subject to distortions related to the specificity of groupthink.

The cognitive school of strategic management, one of the ten schools according to Mintzberg *et al.* [23], treats strategy formulation as a mental process. This school explores, using the knowledge of cognitive psychology, how strategic vision and strategies arise under various circumstances in the brain of the CEO. Strategy is a type of perspective (in the form of concepts, maps, diagrams and cognitive frameworks) that influences how people use data from their environment and how they interpret the world.

The effect of high aspirations of executives subjected to the pressure of excessive stakeholder expectations may lead to violations of the law by corporations. Mishina *et al.* [24] when examining a sample of all industrial companies included in the S&P 500, identified 469 cases of violations of law in the years 1990-1999, of which 162 were related to environmental protection, 96 - embezzlement, 124 - falsification of statements and 87 - violations of competition rules. The study showed that also in reputable companies there are violations of the law. The authors explained this paradox using the concepts of loss aversion and hubris. Research shows that both managers' fear of failing to achieve their internal aspirations and the pressure of external stakeholder expectations increase the likelihood of law violations. The threat of worse results in the future and the resulting potential costs for the organization and its management increase the likelihood of illegal activities. This probability is even greater if the company is considered to be one of the best, as evidenced by the cases from the early 2000s of companies such as Enron, WorldCom, or Lehman Brothers.

Research by Kahneman and his colleagues [25] show that awareness of cognitive biases only slightly improves the quality of strategic decisions, both at the individual and organizational level. Board members can do little to suppress their own cognitive tendencies because of the way the human brain works [26]. Even the most experienced and well-meaning manager is prone to committing cognitive biases.

The conducted research also concerns the difficult to measure emotional states of managing managers and their importance in shaping strategic choice, as exemplified by the work of J.Delgado-Garcia and De la Fuente-Sabate [27] presenting research on a group of managers from the Spanish banking sector. The literature dealing with emotions uses various terms such as affect, mood and emotion which are difficult to distinguish. They used the approach of K.Daniels [28] who combines the above states into the so-called affective traits referring to stable individual differences in the long-term experience of positive (e.g. enthusiasm, excitement) or negative (e.g. irritability, anxiety) feelings.

In the literature on the relationship between cognition and emotion there are several concepts about the influence of feelings on the choice of strategy. For example, Staw and Barsade [29] found that managers with strong positive feelings (passion, enthusiasm) require more information and make better use of it than those with weak positive feelings [30]. People with negative feelings are more likely to use fixed decision patterns for complex problems and less likely to rely on intuition [31].

According to most authors positive feelings influence the simplification of strategic processes and negative feelings favour more accurate and careful processes. Psychologists agree that positive feelings can limit the cognitive abilities of decision-makers and even reduce the motivation to think in a more complex way which leads to simplifications in making strategic decisions. Negative emotions in turn, increase motivations to engage in more detailed and thorough processes [28] [32].

Recently these explanations have been questioned more and more often. It is believed that both types of feelings lead to quite different behaviours deviating from the above outlined pattern. Positive feelings lead to greater creativity and innovation, while negative ones lead to greater caution and conservatism. Positive feelings generate results that more often deviate from the industry average [27].

Cognitive biases are reinforced by feelings and emotions. Affects refer to periodic (sometimes very short-lived) moods or states that people experience during daily activities, as well as more persistent tendencies to feel positive or negative feelings. They must be distinguished from emotions which are attracted to more complex patterns of subjective cognitions, physiological responses and expressive behaviours such as joy, sadness and anger. Emotions are more intense and last longer than emotional reactions. They play a large role in the creation of new business ventures [30] [33].

Decisions made can strongly depend on people's emotional states. As a rule people in a good mood make more optimistic judgments and tend to take risks and vice versa: people in a bad mood generally make a more thorough analysis of the incoming information. In addition moods depend significantly on the prevailing meteorological conditions. For example, on sunny days and before holidays people are more optimistic about life [34].

One of the most important problems that behavioural economics deals with is the emotions associated with reciprocating feelings and actions. We find the principles of reciprocity in the oldest moral codes of civilization, such as the Code of Hammurabi or religious injunctions (do unto your neighbour as you would do unto yourself). According to Adam Smith [35, p.59]: „*The sentiment which most immediately and directly prompts us to reward, is gratitude; that which most immediately and directly prompts us to punish, is resentment. (...) To reward, is to recompense, to remunerate, to return good for good received. To punish, too, is to recompense, to remunerate, though in a different manner; it is to return evil for evil that has been done.*”

A contemporary overview of various forms of reciprocating behaviour can be found in the work of Kolm [36] which in many places refers to the concept of A.Smith. According to Kolm reciprocation is treating others as they treat us because it is based on real facts and not on the basis of any agreements or expectations regarding mutual relationships. Reciprocity is present in all social interactions and relationships between individuals or groups. Most people enjoy being able to reciprocate. According to the Nobel laureate V.L.Smith [37] people in all cultures engage in the exchange of kindness (in various forms) to win the favour of other members of the community. The tendency of people to reciprocate became the main reason for the development of social exchange and over time it turned into trade in its present form.

Reciprocation can take two extreme forms: gratitude and revenge. Fehr and Gächter [38] [39] conducted a number of interesting experiments showing how we derive satisfaction

from punishing people who behave dishonestly and how the possibility of punishment reduces selfish behaviour and increases cooperation.

Akerlof and Shiller [10] made trust the basic ingredient of "animal spirits". Trust implies behaviour that goes beyond a rational approach to decision-making and plays a central role in economics. People are active (invest and buy) when they have confidence in the future, and when they are distrustful they withdraw money and sell stocks.

The trust factor and its impact on economic activity are the subject of many different studies. Anthropological experiments conducted among fifteen small communities on different continents [40] showed that where people buy and sell more often in the market, they are also more likely to share equally with others.

Mutual trust of business partners is a key success factor of merger and acquisition [41]. Treating employees fairly and respecting other stakeholders pays to maximize profits in the short term is to reduce wages (and/or employment), as well as to increase product prices. Kahneman *et al.* [42], based on their experiments, presented arguments for limiting such activities in relation to employees and customers in order to maintain a good reputation and the possibility of maximizing profits in the long term.

Fehr *et al.* [43] presented the results of neuroeconomic research on trust and selfish behaviour of other people. During the study of decision-making processes the brains of the experiment participants were scanned by PET (positron emission tomography). When punishing a dishonest partner brain activity was concentrated in the striatum, the part of the brain associated with experiencing reward. Thus the decision to punish a greedy partner is associated with a feeling of satisfaction. Hence the folk saying that "revenge is sweet". Moreover those whose brains showed more striatum activity punished their partners to a greater extent. This suggests that the desire for revenge even if it comes at a cost and seems utterly irrational has a biological basis. The *homo oeconomicus* of traditional economics should not do this. If there were only selfish individuals, then punishing behaviour should generate the same behaviour as without punishment because punishment would be irrational for reasons of additional costs.

Research on the physicochemical processes taking place in the brain shows that the hormone oxytocin is responsible for the feeling of trust in the human body [44] [45]. Oxytocin is involved in the formation of interpersonal bonds. Based on experimental studies it turned out that the level of oxytocin increases when a person realizes that someone trusts him. 98% of the surveyed people are subject to this general regularity. Therefore it is probably oxytocin that is the social "glue" and enables the creation of the econosphere, i.e. the economic system on Earth [43].

Neuroscience (neurobiology) can help to further understand the mental processes involved in emotions, cognition, judgment and decision making [46] [47] [45]. The results of research on the human brain are increasingly used in social sciences including marketing, finance, economics and management. Since the centres of decision-making are located in the central nervous system and the brain, economists should welcome the possibility of exploiting the achievements of behavioural neuroscience. This knowledge is already used by euromarketing, neurofinance or neurostrategy [48].

Advances in neuroscience make it possible to understand brain activity during decision making. Researchers are increasingly using multiple methods at the same time for example, they combine mathematical modelling, computer simulation, behavioural experiments, field research or brain scanning. Thanks to this they obtain a multiplicity of perspectives for the same phenomenon and theories from years ago obtain additional explanations.

The arguments presented above suggest that reciprocation (revenge), even if it involves incurring costs, is biologically justified because it increases the probability of survival. This in turn supports the thesis that the brains of all animals are built to give pleasure to their owners when they do something that is essential for their survival (e.g. punishing dishonest partners, eating, sex, etc.). The neurotransmitter dopamine is responsible for this [49] [50].

Thanks to popular books (e.g. [51] [52] [53] [54]), many executives today realize how biases can distort reasoning in business. However, awareness of the effects of biases has done little to improve the quality of business decisions at either the individual or the organizational level [25].

Though there may now be far more discussion of biases among managers, talk alone will not eliminate them. But it is possible to take steps to counteract them. The McKinsey study of more than 1,000 major business investments showed that when organizations worked at reducing the effect of bias in their decision-making processes, they achieved returns up to seven percentage points higher [55]. Reducing bias improves organization performance and planning effectiveness. People are incapable of recognizing their own biases [25].

„System one” is designed to produce a single coherent interpretation of what is going on around us. But it is highly sensitive to context. The stories it creates are generally accurate, but there are exceptions and cognitive biases are the major and well described example. We almost never catch ourselves in the act of making intuitive errors. Experience doesn't help us recognize them. It also explains why, even when we become aware of the existence of biases, we are not able to eliminate them in ourselves. It is very difficult for us to fix an error we can not see.

This phenomenon explains why managers can not eliminate cognitive biases in themselves decisions. But the fact that individuals are not aware of their own biases does not mean that biases can't be neutralized—or at least reduced—at the organizational level. Most corporate decisions are influenced by many managers of different levels. Executives may not be able to control their own intuition and emotion, but they can apply rational thought to detect others' faulty intuition and improve their judgment [25].

When executives make big decisions in strategic planning, they typically depend on the judgment of their teams to a significant extent. Managers recommending a direction of actions should analyse more deeply the project than the executive has time to do. Inevitably, errors in judgment creep into the recommending team's decision-making process. It can happen when its members „fell in love with a deal”, or are making a faulty comparison to earlier business cases.

To help executives verify decisions Kahneman and his colleagues [25] developed a tool, based on a 12-question checklist, that should disclose cognitive biases of the teams making recommendations (see Table 1). There are three categories of questions: questions the decision makers should ask themselves, questions they should use to challenge the people proposing a course of action, and questions aimed at evaluating the proposal.

This approach is not designed for routine decisions that an executive formally approve. CFOs can use it for major capital expenditures but not their department's operating budget. The possible examples of “quality controllable” decisions can be approving an R&D project, deciding on a large capital expenditure, and making mergers or acquisition.

The quality control concept also assumes a real separation between the strategic planner and the team making the recommendation. In many cases executives overtly or covertly influence a team's proposal, perhaps by picking team members whose opinions are already known, making his or her preferences clear in advance, or signaling opinions during the recommendation phase. If that is the case, the decision maker becomes in reality a

member of the recommendation team and can no longer judge the quality of the proposal because his or her own biases have influenced it. A clear sign that this has happened is overlap between the decision and action stages. If, at the time of a decision, steps have already been taken to implement it, the executive making the final call has probably communicated a preference for the outcome being recommended.

Executives must be systematic, but it is something that not all corporate cultures welcome. Using checklists is a matter of discipline. Implementation of quality control to planning strategic decisions is a good investment of effort. Corporations are not prepared to devote special resources to a quality control exercise. The real challenge for companies interested in implementation of decision quality control is not time or cost. It is the need to build awareness that even highly experienced, and well intentioned managers are fallible. Organizations need to realize that a disciplined decision-making process is the key to a successful strategy. And they should built step-by-step a culture of open debate in which such processes can prosper.

Table 1 - Decision quality control: 12-question checklist

Categories of questions	Questions	Problems
A. questions the decision makers should ask themselves	1. Is there any reason to suspect motivated errors, or errors driven by the self-interest of the recommending team?	Review the proposal with extra care, especially for overoptimism
	2. Have the people making the recommendation „fallen in love with it”?	Rigorously apply all the quality controls on the checklist
	3. Were there dissenting opinions within the recommending team?	Solicit dissenting views, discreetly if necessary
B. questions to challenge the people proposing a course of action	4. Could the diagnosis of the situation be overly influenced by salient analogies?	Ask for more analogies, and rigorously analyze their similarity to the current situation
	5. Have credible alternatives been considered?	Request additional options
	6. If you had to make this decision again in a year, what information would you want, and can you get more of it now?	Use checklists of the data needed for each kind of decision
	7. Do you know where the numbers came from?	Reanchor with figures generated by other models or benchmarks, and request new analysis
	8. Can you see a halo effect?	Eliminate false inferences, and ask the team to seek additional comparable examples
	9. Are the people making the recommendation overly attached to past decisions?	Consider the issue as if you were a new CEO

	10. Is the base case overly optimistic?	Have the team build a case taking an outside view
C. questions aimed at evaluating the proposal	11. Is the worst case bad enough?	Have the team conduct a premortem: Imagine that the worst has happened, and develop a story about the causes
	12. Is the recommending team overly cautious?	Realign incentives to share responsibility for the risk or to remove risk

Source: Own elaboration based on [25]

Conclusions. The greatest responsibility for avoiding the cognitive biases lies with the executives (strategic decision makers) who approve the strategic plans. Decision process is fraught at every stage with the potential for distortions in judgment that result from emotions. Executives can't do much about their own biases. But using the proper tools and procedures, they can recognize and neutralize cognitive biases of their teams. Over time they can implement decision quality control checklist that can reduce the effect of cognitive biases in their organizations. And in doing so, they will help upgrade the quality of strategic decisions in their organizations. Thereby they can make the strategic planning process a source of competitive advantage.

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