SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 238

DECISION-MAKING MECHANISMS IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT: A BEHAVIORAL ECONOMICS PERSPECTIVE

Katarzyna SZARA[1]*, Mariola GRZEBYK[2], Andriy PEKHNYK[3]

[1] University of Rzeszów, Poland; kszara@ur.edu.pl, ORCID: 0000-0003-1687-0505
[2] University of Rzeszów, Poland; mgrzebyk@ur.edu.pl, ORCID: 0000-0003-1107-0250
[3] Ivan Franko National University of Lviv, Faculty of International Relations, Ukraine; apekhnyk7@ukr.net, ORCID 0000-0001-9171-7354
* Correspondence author

Purpose: The aim of this paper is to identify cognitive biases that humans may commit in actions related to sustainable development. These biases can influence decision-making processes, stakeholder engagement, and the implementation of sustainability strategies. By highlighting these cognitive distortions, the paper seeks to support the development of more resilient and inclusive sustainability frameworks.
Design/methodology/approach: The analysis was based on a systematic literature review according to PRISMA principles. Peer-reviewed articles from multidisciplinary databases were screened and selected based on predefined inclusion and exclusion criteria. The review process focused on identifying patterns of cognitive bias across environmental, economic, and social dimensions of sustainable development.
Findings: The systematic literature review allowed for the identification of the most common cognitive biases. This demonstrated that the decision-making mechanisms inherent in behavioral economics are directly relevant to decisions made in the context of sustainable development.
Research limitations/implications: The identified research gap indicates the need for in-depth analyses that will allow for a better understanding of how cognitive biases influence economic decisions in the area of sustainable development. Only by systematically identifying and minimizing them will it be possible to design effective educational, diagnostic, and implementation tools that support the transition towards more responsible economic practices.
Originality/value: This paper contributes to the development of practices related to sustainable development, based on a realistic model of human cognition identified as cognitive biases.
Keywords: cognitive biases, sustainable development, systematic literature review.
Category of the paper: Research paper.

1. Introduction

Human actions are selfish and directed towards self-interest, and in economics, towards maximizing utility. This orientation is based on the concept of economic rationality (the "Homo Oeconomicus" paradigm). An alternative approach is the behavioral approach. Behavioral economics, combining psychological and economic concepts, analyzes how human decision-making biases and cognitive limitations influence choices and behaviors, including environmental ones. The analysis of decision-making mechanisms, heuristics, and cognitive biases, known in behavioral economics' approach to sustainable development, takes a cognitive perspective. Understanding this relationship is crucial for developing effective policies and interventions aimed at increasing sustainable development in a world grappling with serious environmental problems.

The research problem addressed is framed by the question: what cognitive biases can be committed in sustainable development activities?

The aim of this study is to identify cognitive biases that can be committed by humans in sustainable development activities.

The topic of sustainable development is broad and widely presented in the literature, so this work does not include a detailed description. It is assumed that sustainable development meets the needs of the current generation without compromising the chances of future generations to meet them. It combines concern for future generations. It promotes a balance between three dimensions: economic, taking into account growth and efficiency; social, promoting quality of life, equality, and education; and environmental, paying attention to the protection of natural resources and the climate (Florczak 2020). This is a broad topic, so the identification of behavioral mechanisms was based on general assumptions. The rationale for addressing this issue is the interest of behavioral economists in the topic of sustainable development. These works shed new light on traditional theories of economic behavior, based on theoretical constructs and experimental methods drawn from psychology. The relationship between sustainable development and behavioral economics is a dynamic and evolving area of research. The work hypothesizes that despite the complex and interdisciplinary nature of sustainable development, cognitive biases accompanying actions can be effectively identified and analyzed. The text focuses on cognitive biases that occur when making decisions related to sustainable development in its broadest sense. The first part of the paper presents the assumptions of behavioral economics. This is followed by a description of the methodology. The next chapter presents the cognitive biases identified in the analyzed documents as part of a systematic literature review. After a discussion of the paper's assumptions, the conclusion is presented.

2. Behavioral tendencies in the decision-making process

Behavioral economics examines and describes systematic errors, challenging the classical paradigm of rationality and supplementing it with a series of limitations inherent in human nature. Behaviorists strive to portray humans as truly rational, yet imperfect, and sometimes erroneous. As Richard Thaler aptly put it, they strive to "rehumanize" homo oeconomicus (Thaler, 2000, 2018). Behavioral economics allows us to understand anomalies occurring in market participants' decision-making, unexplained by the assumptions of rational choices. The core concept of behavioral economics is cognitive bias. A cognitive bias is a systematic error in thinking that occurs when we incorrectly process and interpret information in the world around us, which influences decisions and judgments. There is evidence of at least sixty cognitive biases that influence thinking and decision-making (Patent, 2022). Cognitive biases can be classified into two groups: individual and social. Individual biases are rooted in intuition and are related to habits that have evolved to shorten and accelerate the decision-making process. Group biases are related to social norms, to established patterns of behavior in society (Aaron, 1999; Zalega, 2015). They are related to the course of cognitive processes. Cognitive processes and emotions simultaneously shape our decisions; their roles in shaping investor actions and market behavior should be viewed as complementary (Baker, Filbeck, Nofsinger, 2021; Zygan, 2015).

3. Methodology

A systematic literature review was conducted using the PRISMA guidelines to ensure a transparent, structured, and comprehensive approach (Kitchenham, 2004). The Web of Science database was selected for analysis due to its broad and interdisciplinary scope. The search included all articles related to sustainable development and behavioral economics. A keyword identification process was used to identify and create search terms using the wildcards "behavioral economics" and "sustainable development". PRISMA (2020) recommendations, a globally recognized and widely followed set of guidelines for reporting systematic reviews and meta-analyses, were used. Data extraction and quality assessment identified articles, followed by a selection, eligibility, and inclusion process. The total number of articles retrieved from the database using keywords in the title, abstract, and keywords was 736. Of these, 15 were excluded because they did not fall within the selected subject areas (economics, econometrics and finance, environment), were not articles or reviews published in peer-reviewed journals or conference proceedings, or were not written in English. After exclusion, 551 papers remained. Due to the large number of papers, the additional criteria

of "cognition bias" were added, yielding 19 papers. Their content was fully analyzed. Only four papers addressed sustainable development, cognitive biases, and behavioral economics. This was deemed too few. The search was repeated, rewording the query by combining the terms "cognitive biases (All Fields)" and "sustainable development (All Fields)". 121 papers were retrieved. The exclusion criteria outlined above were applied, and 52 papers were excluded. The remaining 68 papers related to economics, econometrics and finance, and the environment were mapped. This approach allowed for the evaluation of papers in terms of the SDGs, available on Web o Science (Table 1).

Table 1.
Distribution of publications by SDG (n = 68)

SDG	Number of publications	% z 68
13. Climate Action	17	25.000%
03. Good Health and Well-Being	14	20.588%
12. Responsible Consumption and Production	14	20.588%
02. Zero Hunger	13	19.118%
04. Quality Education	11	16.176%
14. Life Below Water	11	16.176%
15. Life on Land	11	16.176%
11. Sustainable Cities and Communities	9	13.235%
09. Industry, Innovation and Infrastructure	8	11.765%
07. Affordable and Clean Energy	5	7.353%
08. Decent Work and Economic Growth	3	4.412%
10. Reduced Inequality	3	4.412%
01. No Poverty	2	2.941%
05. Gender Equality	2	2.941%
06. Clean Water and Sanitation	1	1.471%
17. Partnerships for the Goals	1	1.471%
No SDG data in the record	20	29.412%

Source: Web of Science.

This activity is related to the popularity of analyses related to the SDGs (Grzebyk et al., 2023; Grzebyk et al., 2025). After quantitative mapping of the papers, abstract analysis was initiated, followed by an in-depth content analysis. In the final phase, 22 publications were included, which—in the authors' opinion—most clearly and substantively addressed the identified cognitive mechanisms in the context of sustainable development. This selection was based on content compliance with analytical criteria and interpretative potential for classifying cognitive biases.

4. Obtained Results

To organize the literature analysis, clustering was performed. Mapping all the topics generated four clusters (Figure 1, Table 2). Clusters facilitate the identification of correlations between different topics, facilitating the interpretation of the obtained results. The strength of keywords was indicated by the thickness of the connecting lines. The size of the nodes also revealed the frequency of the keyword or topic, in addition to the clusters and lines.

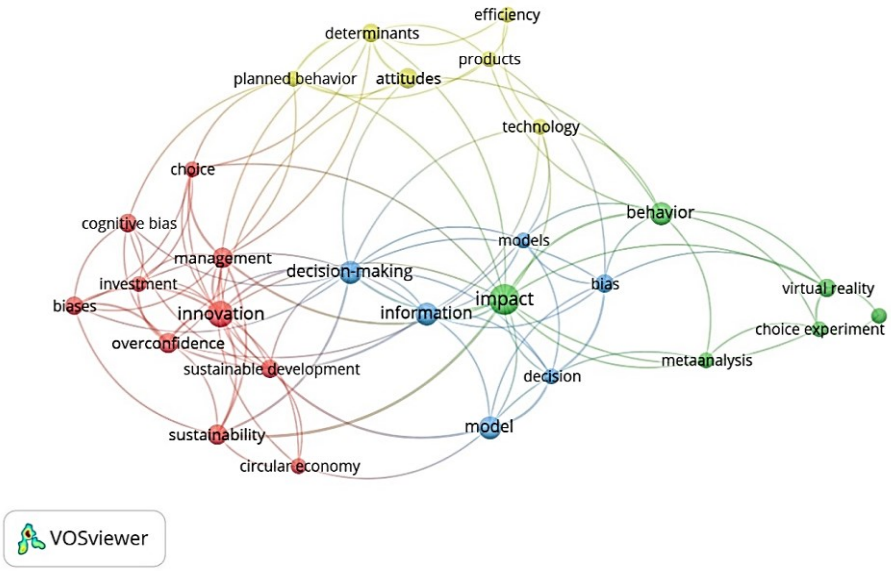

Figure 1. Keyword Map (occurrences).

Source: Own work using VOSviewer.

Table 2.
Clusters by keyword

Cluster red	**Cluster green**	**Cluster blue**	**Cluster yellow**
Biases	Behawior	Bias	Attitudes
Choice	Choice experiment	Decision	Determinants
Circular economy	Climate change	Decision – making	Planer behawior
Cognitive bias	Impact	Information	Products
Innovation	Metaanalysis	Model	Technology
Investment	Virtual reality	Models	
Management			
Overconfidence			
Sustainability			
Sustainable developmemnt			

Source: Own work.

The cluster map shows a network of co-occurrences of terms (e.g., keywords) grouped based on the strength of their interconnectedness. Each node represents a single term, and the lines between them indicate co-occurrences in the same document or dataset. Colors indicate thematic clusters, i.e., groups of terms with strong semantic connections. The red cluster can be labeled "Management, Innovation, Sustainability". This cluster combines

research on innovation implementation with 13 other nodes, including sustainability strategy and the impact of cognitive biases on managerial decisions. Its central location in the map suggests a significant role in the network structure. It is characterized by a high frequency of words such as innovation and sustainability. The blue cluster can be labeled "Decisions, Models, Information". It is characterized by a high frequency of decision-making and information. Strong connections exist between terms related to decision-making and modeling (e.g., model ↔ impact from the green cluster). The nodes are densely connected, indicating thematic coherence. The cluster focuses on decision analysis, the impact of information, and the application of models in the context of efficiency and sustainability. The green cluster can be defined as "Behavior, Technology". It is characterized by a moderate frequency of occurrence but a high strength of association for the word "behavior". It is less centrally located but clearly distinguished thematically. The cluster encompasses experimental research on user behavior, technology, and cognitive effectiveness. The yellow cluster can be defined as "Attitudes, Planned Behavior, Determinants". It is characterized by a moderate frequency of occurrence but strong associations between psychological and consumer terms. The nodes are more dispersed, which may indicate interdisciplinarity. The cluster focuses on theories of planned behavior, consumer attitudes, and factors influencing purchasing decisions. A detailed text analysis of the publications was based on identifying the names of errors according to the findings of the literature. Table 3 presents a brief description of the cognitive errors. This intention stemmed from the occurrence of descriptive errors in most cases.

After distinguishing errors, we identified which clusters they belonged to. The identified errors were assigned to the red cluster: overconfidence (Wang et al., 2021; Joseph et al., 2023), overestimation, comparison bias (Joseph et al., 2023), and confirmation bias (Cristofaro et al., 2024; Oliveira et al., 2025).

Publications assigned to the green cluster focused on topics related to behavior, technology, virtual reality, and efficiency. The identified cognitive biases included emotional bias (Vassilopoulos et al., 2024; Pandey, Pandey, 2025), information processing bias (Pandey, Pandey, 2025), and illusion of control (Borowa et al., 2023).

The blue set was dominated by cognitive biases such as status quo bias (Huang, 2026; Cristofaro et al., 2024), anchoring bias (Kaenzig, Wüstenhagen, 2010; Vargas-Lama, Osorio-Vera, 2020), and framing bias (McGowan et al., 2023; Vassilopoulos et al., 2024; Kaenzig, Wüstenhagen, 2010). The papers assigned to this yellow cluster identified biases such as awareness bias (Giordano et al., 2019), herd bias (Shantha, 2019), and cognitive reflection bias (Shantha, 2019). Assigning cognitive biases to specific thematic clusters allows for a better understanding of the decision-making and research contexts in which specific cognitive bias mechanisms occur. Although not all publications clearly identify biases, their presence can be inferred based on descriptions of behaviors, decisions, and research results.

This approach not only allows for the classification of biases within a thematic structure but also provides a starting point for further diagnostic analyses.

Table 3.
Selected behavioral errors identified in the analyzed works

Cognitive Bias	Description	Authors of Analyzed Studies
Anchoring bias	Basing decisions on the first available information, even if irrelevant.	Kaenzig, Wustenhagen (2010), Vargas-Lama, Osorio-Vera (2020)
Authority bias	Accepting authority opinions as valid regardless of actual competence.	Almeida-Silva et al. (2024)
Availability heuristic	Excess of negative information distorts perception.	Xu et al. (2018)
Awareness bias	Discrepancy between declarations and actual behavior.	Giordano et al. (2019)
Bounded rationality	Limited information processing leads to simplified decisions.	Frör (2008)
Cognitive reflection bias	Preference for fast, intuitive answers over deeper analysis.	Shantha (2019)
Comparison bias	Comparing oneself to others leads to flawed decisions or scaling.	Joseph et al. (2023)
Confirmation bias	Interpreting information in line with one's own beliefs.	Cristofaro et al. (2024), Oliveira et al. (2025)
Framing effect	Decisions depend on how the same information is presented.	McGowan et al. (2023), Vassilopoulos et al. (2024), Kaenzig, Wustenhagen (2010)
Herd bias	Following others without independent analysis.	Shantha (2019)
Illusion of control	Overestimating one's influence over a situation.	Borowa et al. (2023)
Information processing bias	Preferences in how information is processed (e.g., visual vs textual).	Pandey, Pandey (2025)
Overconfidence	Overestimating one's skills leads to risky decisions.	Wang et al. (2021), Joseph et al. (2023)
Overestimation	Inflating values, capabilities, or impact of actions.	Joseph et al. (2023)
Perception bias	Distorted perception of reality due to prejudice.	Xu et al. (2018)
Present bias	Favoring immediate rewards over long-term benefits.	McGowan et al. (2023), Kaenzig, Wustenhagen (2010)
Recall bias	Inaccurate recollection of past events.	Giordano et al. (2019)
Status quo bias	Preferring the current state despite better alternatives.	Huang (2026), Cristofaro et al. (2024)

Source: prepared by the authors (*the description of errors is general and can be found in the works of Chaira et al., 2020; Cossette, 2014; French et al., 2023; Kaheneman, 2012; Kahneman, Tversky, 1973; Szara, 2024).

5. Discussion

The literature on the subject provides numerous confirmations of the occurrence of cognitive biases in the context of sustainable development. The analyzed publications cover diverse areas, such as the economy, employee behavior, and respondent attitudes. Due to their differing methodological approaches, direct comparison is not possible, but they constitute significant examples of the presence of cognitive biases in various contexts related to the concept of sustainable development (Kapsalis, Kapsalis, 2020).

It is worth emphasizing that in many cases, cognitive biases were not clearly identified in the articles. They were often presented descriptively or hidden under the general term "cognitive bias". Selected examples from the content analysis of the publications are presented below.

Xu et al. (2018) indicate that "tourists' perceived safety can be severely biased", which the authors attribute to the availability of media information. This description corresponds to the availability heuristic, exacerbated by the phenomenon of "media panic caused by the publication of excessive negative reports," meaning an excess of negative media reports leading to a distorted perception of risk.

Giordano et al. (2019) present a classic example of awareness bias, pointing to respondents' lack of awareness of the actual scale of food waste. The authors note that self-assessment bias can be reinforced by other cognitive mechanisms, such as the positive illusion—the belief that "I'm not doing so badly".

Fror (2008) highlights respondents' cognitive limitations stemming from limited time, resources, and information-processing capacity. He also points to a tendency to use simplified decision rules (heuristics), which impacts the quality of project evaluations and their benefits.

The identified cognitive limitation bias is a form of unintentional cognitive bias resulting from respondents' limited ability to process complex information, understand product attributes (e.g., insurance), and logically compare alternatives in choice experiments.

Consequently, individuals with lower cognitive competences are more likely to make decision errors, use simplified strategies (e.g., omitting attributes), and their declarations of "willingness to pay" are less consistent and more susceptible to hypothetical bias.

Veettil et al. (2025) indicate that hypothetical bias is more pronounced in individuals with lower cognitive abilities, and its intensity decreases with increasing cognitive abilities: "We show that the magnitude of the hypothetical bias is higher at a lower level of cognitive ability and that bias diminishes with an increase in cognitive ability". The authors also emphasize that motivational stimuli can increase cognitive effort, especially in individuals with lower competences, for whom the cognitive cost is higher. This phenomenon is the core of cognitive limitation bias, a distortion resulting from a limited ability to process information and make rational decisions.

Cognitive reflection bias, although not explicitly mentioned, can be inferred from the analysis of the concept of self-reflection—understood as the cognitive processing of experiences. The authors emphasize that experience itself does not automatically lead to learning: "Past trading experiences do not directly produce learning. Rather, the experiences are to be cognitively reflected (that is, self-reflection) to yield learning to reduce behavioral biases". A lack of cognitive reflection leads to the perpetuation of decision-making errors, including herd bias, the occurrence of which is fully mediated by the level of reflection: "Self-reflection fully mediates the relationship between trading experience and herd bias" (Shanta, 2019).

Comparison bias in the context of entrepreneurial cognition appears as a distortion resulting from social, market, or strategic comparisons. Joseph et al. (2023) indicate that entrepreneurs compare the growth trajectories of their startups with companies with different resources and contexts: "They compare their startup's growth trajectory with that of successful peers or industry benchmarks". Such comparisons lead to excessive optimism and poor strategic decisions, reinforced by the cognitive pressure resulting from success narratives: "Narratives of rapid scaling in startup ecosystems create cognitive pressure to conform".

Confirmation bias has been identified in studies by Cristofaro et al. (2024) and Oliveira et al. (2025), where the authors analyze the impact of cognitive biases on the decisions of managers of medium-sized enterprises implementing sustainable performance management systems. Managers tend to confirm their own beliefs by selectively treating information: "Managers tend to rely on familiar performance indicators and disregard sustainability metrics that challenge their existing mental models".

The framing effect is a key element of the experiment described by McGowan (2023). The author manipulates the presentation of fuel savings, demonstrating that respondents are willing to pay more for a more fuel-efficient car when the savings are presented over a one- or three-year period, rather than a month—even though the total remains the same.

Overconfidence bias is described in detail by Wang et al. (2021), who analyze the impact of managers' overconfidence on business transformation decisions. Overestimating one's own abilities leads to an expansion of the scope of activities, disregarding real resource and market constraints, which is often associated with the illusion of control—the belief in the ability to predict and control complex processes. It is also worth mentioning the work by Kapsalis & Kapsalis (2020), in which the authors attempt to monitor and minimize cognitive biases in the process of social change. The publication contains references to mechanisms such as status quo bias, confirmation bias, optimism bias, and anchoring bias, although they are not always clearly identified.

The authors of the analyzed works often cite biases that are most widely known in the literature (Almeida-Silva et al., 2020; Liu, 2017, Dumbura Eyupoglu, 2025; Hietschold, Voegtlin, 2021).

Such efforts are confirmed by the work of other authors rooted in behavioral economics. Popular biases mentioned in the works of other authors include: framing effects (Fetherstonhaugh, Rose, 1999), confirmation bias (Pericherla, Rachuri, Rao, 2018), conformist herding bias (e.g. “herd behavior”, social proof, social norms) (Sharma 2024), overoptimism (Schaupp, Carter, 2010), anchoring heuristic (Vermeer, 2016; Palombi, Nonino, Borgatti, 2024), conservatism bias (Castelo, Ward, 2020), affirmation bias (Grillo, Pizzutti, 2020), group effect (Friedrich et al., 2019), illusion of control (Yarritu, Matute, Vadillo, 2014), contribution bias (Calanchini et al., 2022), overconfidence (Sharma, 2024; Gudmundsson, Lechner, 2013). The presentation of cognitive biases as decision-making mechanisms can also be found in the

works of Katsamakas, Madany (2019), Miłaszewicz, Borawska (2021), Morné et al. (2024), Peters (2022), Szara (2020), and Śliwowski, Wincewicz-Price, (2019).

The review included publications available in the Web of Science database, and their selection and interpretation of descriptions are subjective, despite the use of a procedure consistent with PRISMA guidelines. Detailed content analysis and the assignment of specific cognitive biases based on descriptions may raise interpretational questions—not all texts allow for a clear classification.

The main premise of the study was to identify cognitive biases, and this was achieved. The hypothesis was confirmed: Despite the complex and interdisciplinary nature of sustainable development, cognitive biases accompanying undertaken actions can be effectively identified and analyzed. A systematic literature review allowed for the identification of the most common cognitive biases.

This demonstrated that the decision-making mechanisms inherent in behavioral economics are directly relevant to decisions made in the context of sustainable development.

The identified cognitive biases influence not only the perception of sustainable development goals but also the effectiveness of implementing ESG strategies, the selection of assessment indicators, and the interpretation of environmental and social data. The results of the analysis indicate the need to design diagnostic and educational tools that take into account decision-makers' cognitive limitations and support debiasing processes. These conclusions contribute to the development of sustainable development practices based on a realistic model of human cognition.

Further work is recommended in specific areas of sustainable development, so that the bias occurring within an industry, phenomenon, or other parameter can be compared.

This work should analyze cognitive biases and their determinants in each area of sustainable development. Another research area could be the assessment of the social impact on cognitive biases when making decisions related to sustainable development.

6. Conclusion

According to the basic assumption of classical economics, humans are rational beings, meaning that their actions are guided by the principle of maximizing their own utility. Among various options, they choose the one that is most beneficial to them. The focus on rational, economically driven human behavior is a source of criticism for mainstream economics, which is often described as "desocialized". The development of behavioral economics has led to a challenge to existing paradigms in economics. Behavioral economics allows us to understand anomalies occurring in market participants' decision-making, unexplained by normative approaches.

In the context of sustainable development, behavioral economics reveals that the decisions of individuals and organizations are often burdened by cognitive biases—such as the status quo bias, overconfidence, the availability heuristic, and others. Awareness of these mechanisms and their impact on consumer, investment, and strategic choices is crucial for the effective implementation of sustainable policies.

The identified research gap indicates the need for in-depth analyses that will allow for a better understanding of how cognitive biases influence economic decisions in the area of sustainable development. Only by systematically identifying and minimizing them will it be possible to design effective educational, diagnostic, and implementation tools that support the transition towards more responsible economic practices.

References

1. Aaron, H. (1999). Retirement, Retirement Research, and Retirement Policy. In: H. Aaron (ed.), *Behavioral Dimensions of Retirement Economics* (pp. 60-61). Washington D.C., New York.
2. Almeida-Silva, M., Andrade, G., Luis, T., Santos, M., Grilo, A. (2024). Influence of cognitive factors on adherence to social distancing and the use of masks during the COVID-19 pandemic by young adults: A systematic review. *Social Sciences–Basel*, *13(5).* https://doi.org/10.3390/socsci13050275
3. Baker, H., Filbeck, G., Nofsinger, J. (2021). *Finanse behawioralne. Co każdy powinien wiedzieć.* Warszawa: PWN, p. 114.
4. Borowa, K., Kamoda, S., Ogrodnik, P., Zalewski, A. (2023). Fixations in agile software development teams. *Foundations of Computing and Decision Sciences, 48(1),* 3-18. https://doi.org/10.2478/fcds-2023-0001
5. Calanchini, J., Schmidt, K., Sherman, J., Klein, S. (2022). The contributions of positive outgroup and negative ingroup evaluation to implicit bias favoring outgroups. *PNAS, 119(40),* e2116924119. https://doi.org/10.1073/pnas.2116924119
6. Castelo, N., Ward, A.F. (2021). Conservatism predicts aversion to consequential Artificial Intelligence. *PLoS ONE, 16(12),* e0261467. https://doi.org/10.1371/journal.pone.0261467
7. Chaira, A., Brunetta, F., Boccardelli, P. (2020). Cognitive biases and decision-making strategies in times of change: a systematic literature review. *Management Decision*, *59(3).* https://doi.org/10.1108/MD-07-2019-1006
8. Cossette, P. (2014). Heuristics and cognitive biases in entrepreneurs: a review of the research. *Journal of Small Business & Entrepreneurship, 27(5),* 471-496. https://doi.org/10.1080/08276331.2015.1105732

9. Cristofaro, M., Giardino, P.L., Camilli, R., Hristov, I. (2024). Unlocking the sustainability of medium enterprises: A framework for reducing cognitive biases in sustainable performance management. *Journal of Management & Organization*, *30(3),* 490-520. https://doi.org/10.1017/jmo.2023.55
10. Dumbura, A., Eyupoglu, S. (2025). The role of affective commitment in promoting knowledge sharing in Zimbabwean higher education. *South African Journal of Business Management, 56(1)*. https://doi.org/10.4102/sajbm.v56i1.4690
11. Fetherstonhaugh, D., Rose, L. (1999). Framing Effects and Income Flow Preferences in Decisions about Social Security. In: H. Aaron (ed.), *Behavioral Dimensions of Retirement Economics* (pp. 187-209). Washington D.C., New York/
12. Florczak, E. (ed.) (2022). *Zrównoważony rozwój jako trend kształtujący współczesną gospodarkę*. Warszawa: C.H. Beck.
13. French, A.M., Storey, V.C., Wallace, L. (2023). The impact of cognitive biases on the believability of fake news. *European Journal of Information Systems*, 1-22. https://doi.org/10.1080/0960085X.2023.2272608
14. Friedrich, M.P.A., Basso, K., Espartel, L.B., Dalla Corte, V.F. (2019). The effect of groups on trust violation and recovery. *ReMark – Revista Brasileira De Marketing, 18(3),* 1-25. https://doi.org/10.5585/remark.v18i3.16364
15. Frör, O. (2008). Bounded rationality in contingent valuation: Empirical evidence using cognitive psychology. *Ecological Economics*, *68(1-2),* 570-581. https://doi.org/10.1016/j.ecolecon.2008.05.021
16. Giordano, C., Alboni, F., Falasconi, L. (2019). Quantities, determinants, and awareness of households' food waste in Italy: A comparison between diary and questionnaires quantities. *Sustainability, 11(12).* https://doi.org/10.3390/su11123381
17. Grillo, T., Pizzutti, C. (2020). Recognizing and Trusting Persuasion Agents: Attitudes Bias Trustworthiness Judgments, but not Persuasion Detection. *Personality and Social Psychology Bulletin*, *47(5).* https://doi.org/10.1177/0146167220946197
18. Grzebyk, M., Stec, M., Hejdukova, P. (2023). Implementation of sustainable development goal 8 in European Union countries – A measurement concept and a multivariate comparative analysis. *Sustainable Development, 31(4),* 2758-2769. https://doi.org/10.1002/sd.2545
19. Grzebyk, M., Stec, M., Stec, B. (2025). An Evaluation of the Implementation of Sustainable Development Goal 7 in European Union Countries in 2013 and 2022 Using the Ward's Method. *Humanities and Social Sciences*, *32(1),* 47-59. https://doi.org/10.7862/rz.2025.hss.04
20. Gudmundsson, S., Lechner, Ch. (2013). Cognitive biases, organization, and entrepreneurial firm survival. *European Management Journal,* 31(3), 278-294. https://doi.org/10.1016/j.emj.2013.01.001

21. Hietschold, N., Voegtlin, C. (2021). Blinded by a Social Cause? Differences in Cognitive Biases between Social and Commercial Entrepreneurs. *Journal of Social Entrepreneurship*, *13(3),* 431-452. https://doi.org/10.1080/19420676.2021.1880466
22. Huang, S.Y.B. (2026). Asking fintech voice chatbots: Explaining consumer switching intention by status quo bias theory. *Journal of Retailing and Consumer Services*, *88*. https://doi.org/10.1016/j.jretconser.2025.104457
23. Joseph, G.C., Aboobaker, N., Zakkariya, K.A. (2023). Entrepreneurial cognition and premature scaling of startups: A qualitative analysis of determinants of start-up failures. *Journal of Entrepreneurship in Emerging Economies*, *15(1),* 96-112. https://doi.org/10.1108/JEEE-11-2020-0412
24. Kaenzig, J., Wustenhagen, R. (2010). The effect of life cycle cost information on consumer investment decisions regarding eco-innovation. *Journal of Industrial Ecology, 14(1),* 121-136. https://doi.org/10.1111/j.1530-9290.2009.00195.x
25. Kahneman, D. (2012). *Pułapki myślenia. O myśleniu szybkim i wolnym.* Warszawa: Media Rodzina.
26. Kahneman, D., Tversky, A. (1973). Availability: A Heuristic for Judging Frequency and Probability. *Cognitive Psychology, 5(2),* 207-232. https://doi.org/10.1016/0010-0285(73)90033-99
27. Kapsalis, T.A., Kapsalis, V.C. (2020). Sustainable development and its dependence on local community behavior. *Sustainability, 12(8).* https://doi.org/10.3390/su12083448
28. Katsamakas, E., Madany, H. (2019). Effects of user cognitive biases on platform competition. *Journal of Decision Systems*, *28(2),* 138-161. https://doi.org/10.1080/12460125.2019.1620566
29. Kitchenham, B. (2004). *Procedures for Performing Systematic Reviews*. Keele: Keele University.
30. Liu, Y., Segev, S., Villar, M.E. (2017). Comparing two mechanisms for green consumption: Cognitive-affect behavior vs theory of reasoned action. *Journal of Consumer Marketing*, *34(5),* 442-454. https://doi.org/10.1108/JCM-01-2016-1688
31. McGowan, F.P., Denny, E., Lunn, P.D. (2023). Looking beyond time preference: Testing potential causes of low willingness to pay for fuel economy improvements. *Resource and Energy Economics*, *75*. https://doi.org/10.1016/j.reseneeco.2023.101404
32. Miłaszewicz, D., Borawska, A. (2021). Zastosowania koncepcji ekonomii behawioralnej w celu zwiększenia skuteczności kampanii społecznych. *Ekonomia XXI Wieku*, *24*, p. 131.
33. Morné, O., Flowerday, S., van der Schyff, K. (2024). Optimism bias in susceptibility to phishing attacks: an empirical study. *Information and Computer Security.* https://doi.org/10.1108/ICS-02-2023-0023
34. Oliveira, A.Y., Mendes, J.A.J., Zanon, L.G., Gerolamo, M.C., Zeidler, V.G.Z. (2025). Sustainable development: Prioritizing attributes and validating factors for the success of

green startups in Brazilian and German entrepreneurial ecosystems. *Business Strategy and Development, 8(1).* https://doi.org/10.1002/bsd2.70083

35. Palombi, G., Nonino, F., Borgatti, S.P. (2024). The effect of social network structure on group anchoring bias. *Journal of Organization Design*, *13*, 33-44. https://doi.org/10.1007/s41469-023-00162-w
36. Pandey, P.K., Pandey, P.K. (2025). Unveiling the transformative power of augmented reality in retail: A systematic literature analysis. *Journal of Strategy and Management*. https://doi.org/10.1108/JSMA-05-2023-0101
37. Patent, V. (2022). Dysfunctional trusting and distrusting: Integrating trust and bias perspectives. *Journal of Trust Research, 12(1),* 66-93. https://doi.org/10.1080/21515581.2022.2113887
38. Pericherla, S.R., Rachuri, R., Rao, S. (2018). *Modeling Confirmation Bias Through Egoism and Trust in a Multi Agent System*. IEEE International Conference on Systems, Man, and Cybernetics (SMC), Miyazaki, Japan, 1162-1168. https://doi.org/10.1109/SMC.2018.00205
39. Peters, U. (2022). What Is the Function of Confirmation Bias*? Erkenntnis, 87(3),* 1351-1376.
40. Schaupp, L.C., Carter, L. (2010). The impact of trust, risk and optimism bias on E-file adoption. *Information Systems Frontiers*, *12*, 299-309. https://doi.org/10.1007/s10796-008-9138-8
41. Shantha, K.V.A. (2019). Individual investors' learning behavior and its impact on their herd bias: An integrated analysis in the context of stock trading. *Sustainability, 11(5).* https://doi.org/10.3390/su11051448
42. Sharma, P.Ch. (2024). Influence of Behavioural Biases on Market Investment Behaviour – Mediating Role of Brand Trust. *Interdisciplinary Journal of Management Studies (IJMS), 17(1),* 1-19. https://doi.org/10.22059/ijms.2022.331497.674780
43. Śliwowski, P., Wincewicz-Price, A. (2019). *Prościej, taniej i skuteczniej, czyli jak ekonomia behawioralna wspiera polityki publiczne w Polsce*. Warszawa: Polski Instytut Ekonomiczny.
44. Szara, K. (2020). Behaviours towards creativity of SMEs employees. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, *45(1),* 123-135. https://zn.mwse.edu.pl/index.php/zn/article/view/690/667
45. Szara, K. (2024). Behavioral aspects of investments in renewable energy sources on the example of Podkarpackie Province. *Economic and Regional Studies [Studia Ekonomiczne i Regionalne], 17(1),* 164-180. https://doi.org/10.2478/ers-2024-0009
46. Thaler, R. (2000). From Homo Economicus to Homo Sapiens. *Journal of Economic Perspectives, 14(1),* 133-141.
47. Thaler, R. (2018). *Zachowania niepoprawne. Tworzenie ekonomii behawioralnej*. Poznań: Media Rodzina.

48. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. (2021). *BMJ*. https://doi.org/10.1136/bmj.n71
49. Vargas-Lama, F., Osorio-Vera, F. (2020). The Territorial Foresight for the construction of shared visions and mechanisms to minimize social conflicts: The case of Latin America. *Futures, 123*, 102625. https://doi.org/10.1016/j.futures.2020.102625
50. Vassilopoulos, A., Papadaki, L., Koundouri, P. (2024). Can virtual reality nudge toward green investing? An experiment with small business entrepreneurs. *Review of Behavioral Finance, 16(2),* 322-340. https://doi.org/10.1108/RBF-01-2023-0005
51. Veettil, P.C., Yashodha, Y., Vecci, J. (2025). Hypothetical bias and cognitive ability: Farmers' preference for crop insurance products. *American Journal of Agricultural Economics*, *107(3),* 888-924. https://doi.org/10.1111/ajae.12506
52. Vermeer, N. (2016). Age Anchors and the Expected Retirement Age: An Experimental Study. *De Economist*, *164(3),* 255-279.
53. Wang, D.L., Wang, Y.D., Yang, J.Y., Huang, Z.Y., Cui, R. (2021). Managerial cognitive bias, business transformation, and firm performance: Evidence from China. *SAGE, 11(1).* https://doi.org/10.1177/2158244021999156
54. Xu, F., Lin, X.J., Li, S.S., Niu, W.X. (2018). Is Southern Xinjiang really unsafe? *Sustainability, 10(12).* https://doi.org/10.3390/su10124639
55. Zalega, T. (2015). Ekonomia behawioralna jako nowy nurt ekonomii – zarys problematyki. *Studia i Materiały. UW, 1(18).*
56. Zygan, M. (2013). Ekonomia behawioralna – wprowadzenie do problematyki. *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania Uniwersytetu Szczecińskiego, 32*, 9-22.