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Nudge in Poland: A Literature Review Based on Keywords 'Nudge' and 'Nudging' from the Web of Science and Scopus Databases

Abstract:

Objective: The purpose of the study was to present the achievements of Polish research units' scientists in the field of the nudge approach and to identify research areas.

Research Design & Methods: The literature review was conducted based on scientific articles from the Scopus and Web of Science databases. Twenty-six articles that contained keywords such as "nudge" or "nudging" and met all other selection criteria were qualified for the literature review. Maps of keyword associations were created using the VOSviewer and YAKE! software. A chart was prepared showing the total number of publications in each year and what part constituted empirical publications.

Findings: The achievements of scientists from Polish research units in the field of the nudge approach are relatively small, theoretical considerations prevail, and there is little empirical research. The works were published between 2016 and 2025. Research areas focused on issues related to the nudge approach, law, health care, robots, ethics, financial decisions, sustainable development, public policies, and education. Empirical publications concerned issues related to sustainable development, health care, and financial decisions. In empirical studies, nudges were used in the form of default options, reminders, descriptive social norms, gain-framed and loss-framed messages, and fire metaphors.

Implications / Recommendations: The article can be an inspiration for Polish scientists to undertake research on the nudge approach and to experiment with the nudge approach in public policies or in the activities of private enterprises, e.g. in matters related to sustainable development.

Contribution / Value Added: The article presents the publications of scientists from Polish research units on the nudge approach. It is a review of research regardless of the topic or discipline, which guarantees a comprehensive description of current research directions, which can be helpful for scientists and decision-makers.

Keywords: nudge, nudging, behavioural science, behavioural insight, choice architecture

Article classification: theoretical/review paper

JEL classification: D6, D9, I3

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Introduction

The bounded rationality of an individual can be an obstacle to making good decisions. Therefore, scientists and decision-makers try to find solutions to support the decision-making process. The tool of behavioural economics popularised by Richard Thaler and Cass Sunstein (2009), called nudge, has been the subject of research by scientists from all over the world. Nudge is a tool through which public or private decision-makers can try to influence people's behaviour in order to bring about predictable positive changes. It is characterised by the fact that it is not a means of coercion, leaving the individual freedom of choice (Viale, 2018).

The literature provides plenty of evidence confirming the effectiveness of this tool in various areas of life. In Finland, nudges contributed to the reduction in energy consumption by 10% during astronomical winter (Ruokamo et al., 2022). With the help of nudge, the problem of waste segregation was solved in the Canadian city of Halifax, where there was a 27% decrease in the amount of municipal waste collected and a 15% increase in the amount of waste recycled (Akbulut-Yuksel & Boulatoff, 2021). Nudge was also used to promote healthy eating, resulting in a 30% increase in healthy food choices (Michels et al., 2024), and in the case of limiting the amount of sugar consumed, it was reported that the average intake decreased by approximately 27% after using nudge (Venema et al., 2020). The effectiveness of nudge in promoting prosocial behaviour, i.e. making donations, was confirmed (Gråd et al., 2024). It was also tested how nudge affects drivers' behaviour (Zadka-Peer & Rosenbloom, 2024). The impact of nudges on investment decisions was analysed, too (Gajewski et al., 2022). Additionally, nudge has been used in numerous studies in the context of fighting COVID-19 (Zahed & Demir, 2023). It was also pointed out that nudge requires deeper reflection before implementation in order to ultimately be ethical and effective (Wincewicz-Price, 2019).

The rich resources of the world literature on nudge encourage the analysis of research results conducted by scientists from Polish research units. So far, the literature has not produced a study summarising the achievements of Polish science in the field of nudge research. Reviews of the literature were presented, referring to the world literature (Gwiaździński et al., 2023; Laiou et al., 2021). The presentation of research results by Polish scientists can be interesting due to the characteristics of the Polish economy. For example, the World Energy Trilemma Index (WETI), the Modified Energy Transition Index (METI), or the Energy Transition Index (ETI) as well as other indices classify Poland as one of the worst performing EU countries in terms of energy transformation (Bajołek & Król, 2023; Kopeć & Lach, 2021). The Polish energy industry is still largely based on coal, and outdated power grids are not adapted to absorb the energy generated by prosumers. In addition, about a million residential buildings in Poland are energy vampires (Wolska & Kizielewicz, 2025). In the literature, it has been indicated that the characteristics of a given region or population can be important when using nudge (Karlsen & Andersen, 2019).

The aim of this work is to present Polish scientific achievements in the field of nudge and to identify the main research areas. The following research questions are asked:

1. In what research areas do researchers from Polish scientific units use or develop the nudge approach?
2. What type of research was conducted?
3. In what period was the research conducted?

This paper is structured as follows: 1. Introduction; 2. Research methodology; 3. Nudge in research by scientists from Polish research units; 4. Results and discussion; and 5. Conclusions.

Research methodology

In this review of the literature, attention was focused on scientific articles whose authors were affiliated with Polish scientific institutions. In the case of foreign sources, only publications whose authors or coauthors were researchers from Polish scientific units were included. However, the subject of the research included in the analysis was the nudge approach. To transparently organise the undertaken research activities, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standard – intended for systematic reviews and meta-analyses – was used (Page et al., 2021). It had already been successfully used in this type of research regarding the nudge approach (Kubera, 2023; Kuyer & Gordijn, 2023; Wee et al., 2021), but also concerning articles focussing on other research topics (Arman, 2025; Próchniak, 2025).

The literature selection process for this review took place from February to April 2025. The source used to prepare the dataset was the Scopus and Web of Science databases, which were also used to select the sources collected in terms of their usefulness for this review of the literature. The following terms were searched in the indicated databases: 'nudge', 'nudging'. Limiting the search to the Web of Science and Scopus databases and using only keywords such as 'nudge' and 'nudging' significantly narrowed the scope of the analysed literature, which should be considered a limitation of this study.

The activity preceding the search for sources was to determine the criteria according to which the usefulness of a given publication for this work was determined. A list of inclusion criteria (IC) which had to be met for the article to qualify for analysis was extracted. A list of exclusion criteria (EC) was also prepared, which allowed an article not to be included in the analysis; the identification of at least one of these criteria led to the exclusion of the article from further processing. Table 1 presents the inclusion and exclusion criteria. No criterion was used to define the range of years of publication of the articles.

The use of two databases for the literature review, i.e. Scopus and the Web of Science, implied the need to compile the search results from both databases in one file in order to avoid duplicating the same publications and thus distorting the results.

Table 1. The inclusion criteria and exclusion criteria applied in the literature review

Stage	Inclusion criteria	Exclusion criteria
Phase selection	IC1: Title, abstract or keywords contain the words 'nudge' or 'nudging' or related terms.	EC1: There is no reference to the topic of nudge in the title, abstract, or keywords.
Language selection	IC2: Written in English or Polish.	EC2: Written in a language other than English or Polish.
Territorial selection	IC3: Publication assigned in the databases to a specific country – territorial limitation to Poland.	EC3: In the database, the publication is not listed as a work territorially assigned to Poland.
Selection correctness	IC4: A publication referring to the nudge approach.	EC4: The publication does not cover nudge approach.
Final selection	IC5: Access to the publication was obtained.	EC5: Access to the publication was not obtained.

Source: Own elaboration based on the literature review.

The database search was carried out in stages. All stages of the process are presented in Figure 1. It began with a phrase selection (IC1), which yielded 6,209 results for the term ‘nudge’ and 4,844 results for the term ‘nudging’ in the Scopus database. In the Web of Science database, 11,056 results were obtained for the term ‘nudge’ and 10,845 results for the term ‘nudging’. In the second stage, a language selection (IC2) was conducted, which made it possible to reduce the Scopus database to 6,026 results for the term ‘nudge’ and to 4,702 results for the term ‘nudging’. In the same way, the number of results in the Web of Science database was reduced, yielding 10,876 results for the term ‘nudge’ and 10,665 results for the term ‘nudging’.

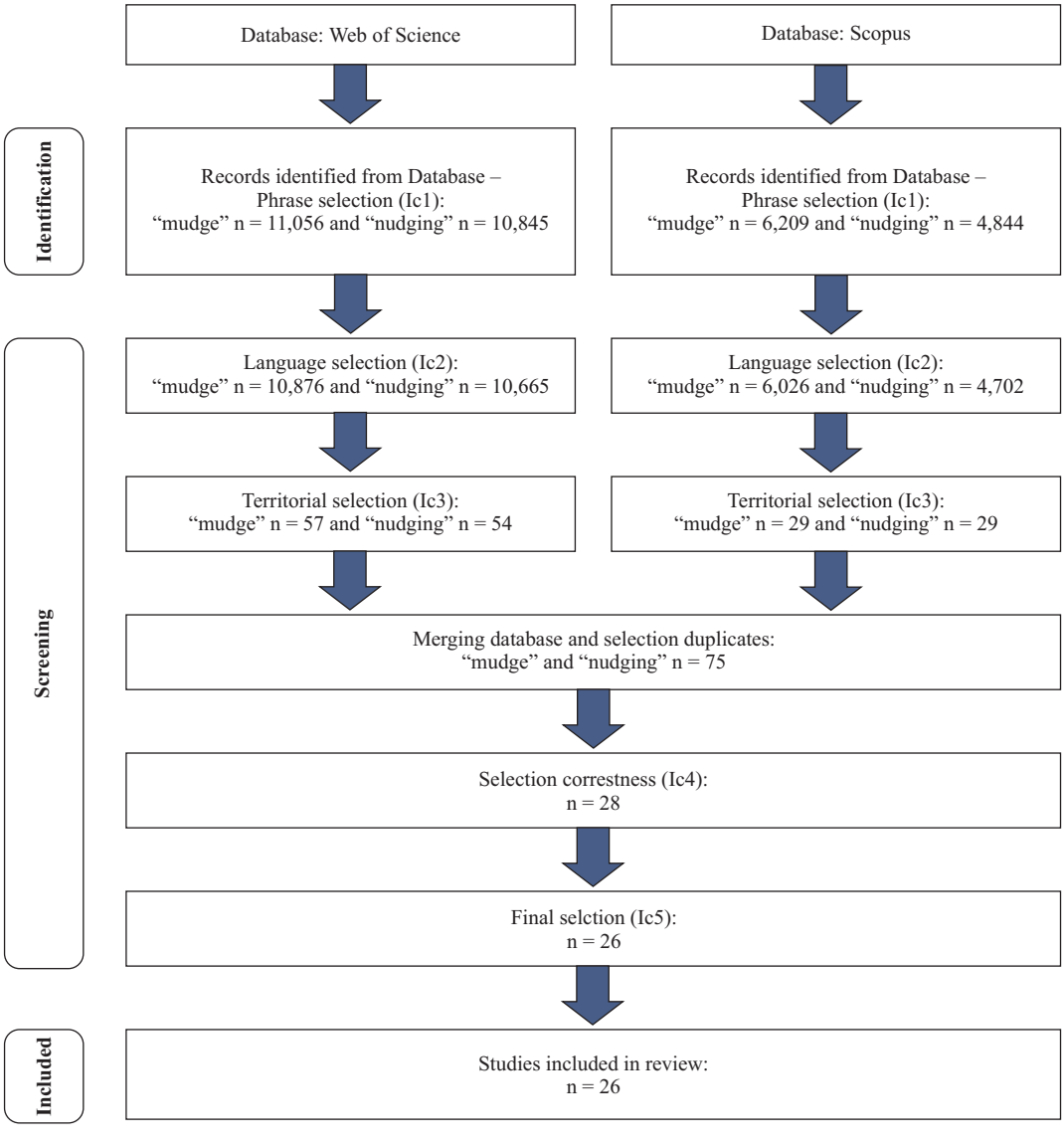

Figure 1. The PRISMA diagram showing the process of selecting the literature for review

Source: Own elaboration based on the literature review.

label;replace by
nudge theory;nudge approach
nudges;nudge approach
nudging;nudge approach
nudge;nudge approach
libertarian paternalism;nudge approach
nudging technologies;nudge approach
social norm nudge;nudge approach
behavioral economics;behavioural economics
waste sorting;waste management
biowaste;waste management
diet;healthy behaviors
physical activity;healthy behaviors
tax law regulation;tax law
tax rate;tax law
legal definitions;law
effectiveness of legal regulation;law
Facebook;social media
Reddit;social media
Twitter;social media
robotic companions;robots and chatbots
social robots;robots and chatbots
mediator robots;robots and chatbots
companion robots;robots and chatbots
evidence synthesis;literature review
scoping review;literature review
systematic review;literature review
green nudge acceptance;green nudges
boosting;boosts
group decision-making;decision making
patient decision-making;decision making
behavioral insights;behavioural insight
message framing;choice architecture
framing;choice architecture
change mechanisms;choice architecture
transparent defaults;choice architecture
saving decision attributes;financial decisions
anxiety;mental health
psychological interventions;mental health
prospect theory;decision science
cognitive biases;decision science
bounded rationality effect;decision science
choice modelling;decision science
stated preferences;decision science
descriptive norms;decision science

Figure 2. Thesaurus file contents

Source: Own elaboration based on the literature review.

In the third stage, territorial selection (IC3) was used, which resulted in 29 results for the term ‘nudge’ and 29 results for the term ‘nudging’ in the Scopus database. Applying territorial selection in the Web of Science database provided 57 results for the term ‘nudge’ and 54 results for the term ‘nudging’. In the next stage, the databases obtained during the described selection process were merged into one document, which allowed for the selection of duplicates. Merging the databases and selecting duplicates led to the selection of 75 publications. Taking into account the limitations resulting from the use of automatic search engines in the Scopus and Web of Science

databases – and, consequently, the possibility of assigning to the analysis articles that were not in their essence related to the subject of the work – a correctness selection of articles (IC4) was carried out. The correctness selection of the articles was carried out by analysing the abstracts and full texts of the publications. At this stage, it was verified whether the publications contained references to the nudge approach. During this stage of selection, 47 publications were rejected. During the final selection (IC5), two publications did not meet the criteria.

Due to the small number of publications obtained after the IC5 stage, it was decided that publications should not be selected based on their type. All publications that passed the selection process were subjected to bibliometric analysis in terms of keyword co-occurrence using the full counting method. All keywords whose minimum number of keyword co-occurrences was at least 1 were taken into account. The aim was to present as many trends as possible among scientists from Polish scientific units in research on the nudge approach. The VOSviewer software, used to create bibliographic maps, was used to conduct the analysis. This tool is employed in broadly understood review studies, e.g. in human resources management (Gajowiak & Włodarkiewicz-Klimek, 2025) or in sustainable development (Osman et al., 2025).

The map was created on the basis of a ris file to which data was downloaded from the Web of Science and Scopus databases. The file in ris format was checked for correct data recording and completeness. In this way, three publications were identified that did not have keywords assigned. Keywords were assigned to these three publications based on their titles and abstracts using the Yet Another Keyword Extractor (YAKE!) software, the advantages of which have been described in the literature (Campos et al., 2020).

During map creation, the programme prepared a list of 110 keywords assigned by the authors from the 26 publications. The obtained phrases were checked for similarities. Phrases repeated in different grammatical forms were unified. Similarly, phrases that, in the author's opinion, were close in meaning and their separate occurrence would make it difficult to understand the map of keyword connections were unified. All unified phrases were included in the thesaurus file, which was loaded into the VOSviewer programme. The contents of the used thesaurus file are presented in Figure 2. The phrases on the left side of the semicolon are keywords that were not unified, whereas the phrases on the right side of the semicolon are unified phrases. Additionally, three keywords – 'own study', 'literature review' and 'Poland' – were not included in the map, because in the context of this analysis they did not provide additional information. As a result of using the thesaurus file and excluding three additional keywords, a list of 66 keywords was obtained, based on which a map of co-occurrence clusters was generated and then analysed.

Nudge in research by scientists from Polish research units

Nudging has been used in the context of tax law, empirically demonstrating that people make mistakes and that the use of nudging combined with a solid understanding of the cognitive process can become a potential solution (Golecki et al., 2016). Attention was also drawn to the potential possibilities of combining legal tools with behavioural economics as well as to the role of nudges and boosts as potential substitutes for legal regulations, e.g. during crisis situations such as the COVID-19 pandemic (Krawiec et al., 2021). Nudges were also presented as a tool that can be used to shape organisational culture in such a way that the employee is not afraid to report irregularities (Jakubiec, 2023).

The description of the effects of the practical applications of nudges in public policies was presented based on the example of the achievements of the Behavioural Research and Innovations Slovakia (BRISK) team (Petranova & Rysová, 2020). A review of knowledge of behavioural insights and the principles of their implementation was also prepared (Miłaszewicz, 2020), providing a comparative framework (Olejniczak et al., 2020).

The possibilities of using nudges to promote screening tests and also to direct medical personnel to take actions consistent with the patient's interest were discussed (Królak et al., 2019). Transparent defaults have been shown to be an ineffective form of encouragement when trying to inspire participation in a learning health care system (Dranseika & Piasecki, 2020). By conducting an empirical study, it was confirmed that the use of nudges in the form of SMS messages can increase the percentage of people who follow medical recommendations regarding the use of medications and controlling blood pressure (Rudenko et al., 2020). Furthermore, a literature review on the use of nudges to promote physical activity and a healthy diet was published (Laiou et al., 2021).

It was verified how descriptive social norms influence the willingness to pay for various forms of segregation and the frequency of waste collection (Czajkowski et al., 2019). In the context of waste management, the possibility of using green nudges is mentioned, which could encourage people to properly segregate waste (Jakimiuk et al., 2023). Under experimental conditions, the preferences of Polish electricity consumers in terms of choosing green defaults were empirically examined provided that they had such an opportunity when choosing an electricity supplier (Miłaszewicz, 2022). Nudge theories are also indicated as the foundation of certain conceptual frameworks that should be used to shape pro-environmental attitudes (Zawieska et al., 2022).

Based on empirical research, it was confirmed that the effect of using nudge depends on the context of a given situation; such conclusions result from a study involving the presentation of nudge as a default option in two games with different reward systems for the participants (Sylwestrzak, 2025). For example, in an empirical study on the selection of a savings programme, the effectiveness of nudges and boosts was confirmed (Krawiec & Bialaszek, 2024). Comparisons occur at the level of a specific nudge, but also at the level of whole concepts. The concept of libertarian paternalism was compared with the Capability Approach, finding common features and indicating the convergence of the goals of both concepts (Ostapiuk, 2024). Theoretical considerations conducted by scientists from Polish research units also concerned the evolution of the decision theory (Zielonka, 2023). Ethical considerations have also been made about encouraging patients to perform screening tests using nudge; it was pointed out that epistemic risk undermines the validity of such action in the context of helping bad choosers (Zameska, 2024). Issues related to the risk of abuse are also raised in relation to robots and chatbots, where attention is drawn to the possibility of manipulating people's behaviour through nudge. At the same time, it is noted that robots can direct people to pro-social behaviours and facilitate making good decisions from the point of view of the individual themself (Indurkhya & Sienkiewicz, 2024; Indurkhya, 2023). Also, owing to the use of artificial intelligence (AI), nudge can become more effective (Zielonka, 2023). Furthermore, in the context of morality, it has been presented that a vision of robotic nudges supports people in moral development and moral improvement (Klincewicz, 2019).

Nudge was also assessed as an effective and implementable tool to counteract online disinformation, which can be supported by chatbots (Gwiaździński et al., 2023). The literature also compared the effects of gain-framed and loss-framed messages during the COVID-19 pandemic, paying attention to the emotional consequences that nudges can cause. It was emphasised that

this aspect should be taken into account in future studies (Dorison et al., 2022). The fire metaphor thread was also developed, showing how, for example, through social robots one can try to limit the spread of COVID-19 (Ervas et al., 2022). The possibilities of using nudges in the educational process were also demonstrated, highlighting that the effects depend on the context and the students' predispositions (Bizon, 2021).

Results and discussion

Eventually, 26 publications by authors affiliated with Polish scientific institutions were qualified for the analysis. These publications were published in the years 2016–2025. Figure 3 presents the total number of publications in each year and the number of publications that contain empirical data. The greatest interest in the topic of nudge in Poland falls in the years 2019–2024. This can be to some extent related to the COVID-19 pandemic (Zahed & Demir, 2023; Dorison et al., 2022), the energy crisis, the acceleration of energy transformation (Miłaszewicz, 2022), and the war in Ukraine, as well as the consequences of these crises.

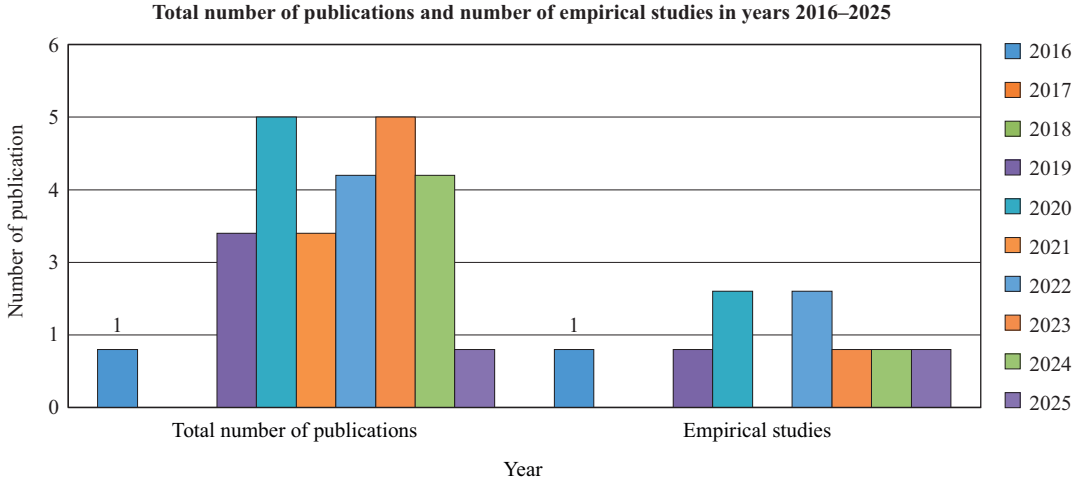

Figure 3. The number of publications over time

Source: Own elaboration based on the literature review.

Studies containing original empirical data constituted less than 35% of all publications included in this review of the literature. However, in the case of two empirical studies, nudge was not the subject of the study but was indicated as a potential solution to the problem discussed (Golecki et al., 2016; Jakimiuk et al., 2023). Hence, the total number of empirical publications was 9, but the empirical data related to the nudge approach was identified only in 7 studies. The remaining 17 publications were theoretical or review-type.

It follows that the nudge approach is a topic that has been relatively recently explored by scientists from Polish research units. Perhaps this is related to the lack of a team in Poland such as the Behavioural Insights Team, which operates in other countries, cooperating with their governments (Baggio et al., 2021; Szczech-Pietkiewicz, 2020; Sousa Lourenco et al., 2016). This lack potentially makes it more difficult to conduct this type of research. It would also be

necessary to check whether this lack is not related to publishing outside the Web of Science and Scopus databases; in future studies, data from the Web of Science and Scopus databases should be supported by data from other databases to verify this. It should be remembered that the Web of Science and Scopus databases do not guarantee access to all articles on the nudge approach. However, the small number of empirical studies can indicate a potentially high degree of difficulty in conducting them.

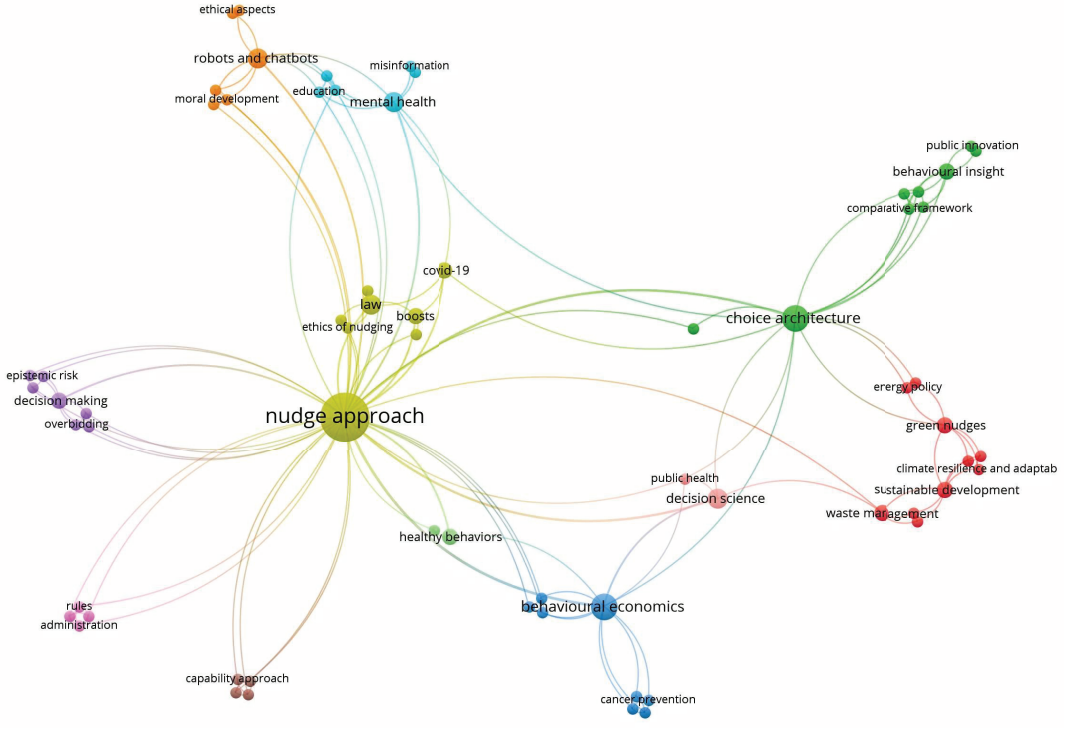

Figure 4. The map of author keywords co-occurrence by clusters

Source: Own elaboration based on the Web of Science and Scopus databases using VOSviewer and YAKE! software.

The bibliographic map created using the VOSviewer software presented as Figure 4 shows 11 clusters of keyword co-occurrences consisting of a total of 66 keywords; Figure 4 shows a map on which each colour indicates a separate cluster. There are 163 links between all phrases. The main topic, according to the assumptions adopted for this work, is the nudge approach; after the unification of keywords, this item appears 17 times and gathers 40 links, and the average publication year (APY) for this phrase is 2021.88. The remaining keywords with an occurrence value greater than or equal to 2 are the following phrases: behavioural economics, choice architecture (5 occurrences each), decision science, law, robots and chatbots, mental health (3 occurrences), COVID-19, boosts, healthy behaviours, waste management, decision-making, green nudges, sustainable development, and behavioural insight (2 occurrences each). Thus, the total number of keywords that had at least two occurrences was 15. The listed keywords indicate the most popular contexts of nudge use in the research of scientists from Polish research units.

The keyword map with the division according to the APY is presented in Figure 5. The earliest publication according to the APY date concerned the possibility of using nudging in tax law. In 2020, most publications presented the possibilities of using nudges in public policy and administration. A similar time period applies to issues related to the use of nudges in health care and education. In later years, health issues were also addressed with reference to COVID-19, healthy behaviours (APY = 2021.5), and mental health (APY = 2023). Publications by scientists from Polish research units also referred to issues related to environmental protection and sustainable development, such as waste management (APY = 2021), green nudge (APY = 2022), and sustainable development (APY = 2022.5).

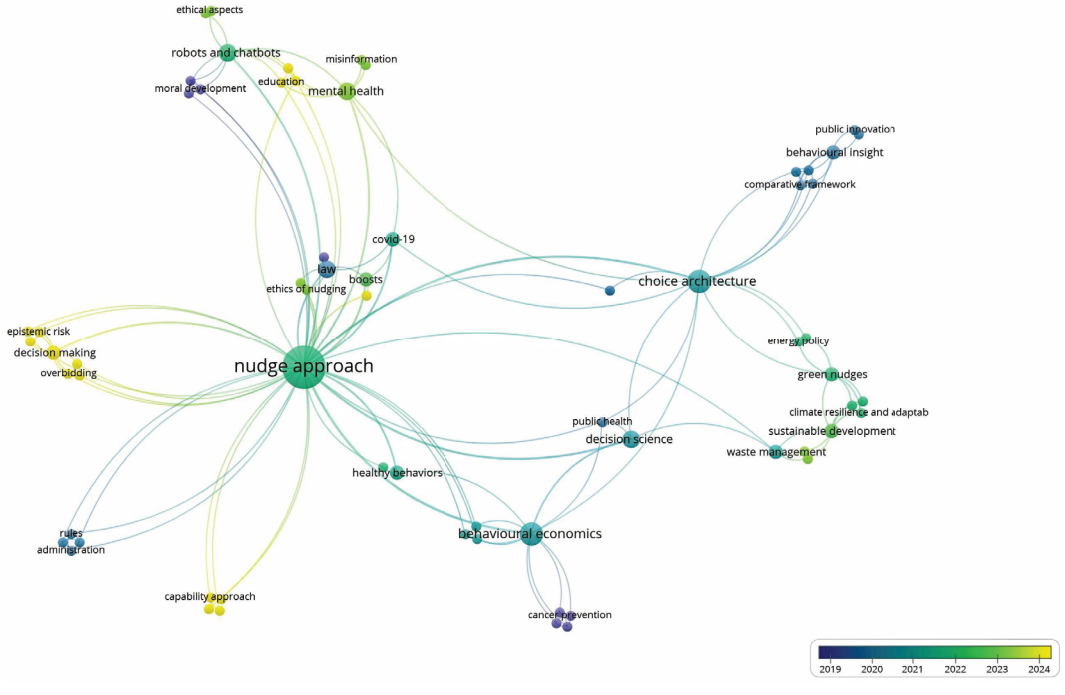

Figure 5. The map of author keywords co-occurrence by average publication year

Source: Own elaboration based on the Web of Science and Scopus databases using VOSviewer and YAKE! software.

According to the APY criterion, the latest research interests of scientists from Polish research units were located in clusters two, five, six, and nine (yellow on the map). The issues within them included terms and phrases such as: overbidding, proportional prize contest, winner take-all contest (APY=2025), decision-making (APY=2024.5), social inclusion, education, sustainability, epistemic risk, ethics of screening, healthcare ethics, paternalism, capability approach, reason to value, freedom, and financial decisions (APY=2024).

In a large part of the publications, the authors refer to the implementation or use of nudge using robots and chatbots (Ervas et al., 2022; Gwiaździński et al., 2023; Indurkhya & Sienkiewicz, 2024; Zielonka, 2023), which can be related to the development of artificial intelligence and attempts to use it to support the human decision-making process, which has happened many times in the literature (Lai et al., 2021). Issues related to robots and chatbots in the context of the nudge

approach appeared most often in publications by scientists from Polish research units in 2022–2024. When preparing future research, it is worth remembering the possibility of combining these tools and comparing the obtained effects with and without the use of AI.

In empirical studies, default options, reminders, descriptive social norms, gain-framed and loss-framed messages, as well as the fire metaphor were all used as types of nudge. In future studies, it can be worth trying to use other nudge techniques that have been mentioned in the literature, such as partitioning, salience, or simplification (Münscher et al., 2016).

Empirical publications covered issues related to sustainable development (Miłaszewicz, 2022; Czajkowski et al., 2019), health care (Dorison et al., 2022; Dranseika & Piasecki, 2020; Rudenko et al., 2020) and financial decisions (Sylwestrzak, 2025; Krawiec & Bialaszek, 2024). There is undoubtedly room for further research exploring issues in the mentioned areas. However, it can also be interesting to conduct empirical research in the field of, for example, education (focusing on increasing students' interest in science) (Fryer et al., 2023), management, supporting rational decision-making (Renz et al., 2023), or public policies in the field of increasing social participation (Milkman et al., 2022).

Conclusions

Although the concept of nudge has been developing worldwide since 2008, in the research of scientists from Polish research units, greater interest in this topic falls in the years 2019–2024. Relatively few studies have been published by scientists from Polish research units on nudge. Most of these works are theoretical texts not supported by empirical data. In future research, it could be valuable to present the results of empirical research conducted in Poland. Currently, there is also a lack of literature that presents the results of nudge implementations in Polish public policies. Perhaps further research should focus on the use of nudges in various types of public policy. The implementation of nudges in public policies could be associated with the need to create a standard list according to which public entities could verify whether a given idea is consistent with the theoretical assumptions of the nudge approach. It can also be interesting to implement nudges in organisations that are not public entities.

In their work, scientists from Polish research units referred to research areas such as law, health care, robots and chatbots, ethics, financial decisions, sustainable development, public policies, and education. However, only in the context of sustainable development, health care, and financial decisions did they conduct research based on empirical data. Therefore, more empirical research is needed. The limitations of this study include the focus on two databases only and, consequently, the small number of publications eligible for review. Furthermore, a limited set of keywords was used, which limits the comprehensiveness of this review. Thus, in future research, it could be valuable to expand this review to include additional databases and a larger set of keywords.

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