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The Current State of Behavioural Economics Studies: A Bibliometric Analysis

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ABSTRACT

The aim of this paper is to present the current state of the published literature related to behavioural economics studies. This paper presents a bibliometric analysis of 1757 documents on behavioural economics published between 1965 and 2024, using data from Scopus to analyse with tools like Microsoft Excel, BiblioMagika, OpenRefine, and VOSviewer. The findings discover that Kahneman's (2003) paper, "Maps of Bounded Rationality: Psychology for Behavioural Economics" is the most highly cited document. This paper also identifies five key research clusters: Substance use and behavioural economics, decision-making, behavioural biases, health interventions, and alcohol-related behaviours. James G. Murphy is the most prolific author with 54 publications, while Warren K. Bickel is the most influential with 4018 citations. The United States emerged as the leading contributor with 1012 publications. This paper highlights the significant growth and interdisciplinary nature of behavioural economics, its applications in public health and policymaking, and the need for more research in diverse cultural and regional contexts.

Keywords: Behavioural Economics, Bibliometric Analysis, Scopus, Public Health JEL Classifications: D90, G40

1. INTRODUCTION

Economic behaviour, the study of how individuals, groups, and institutions make decisions regarding the allocation of resources, is a cornerstone of economic theory (Petracca and Gallagher, 2020). The emergence of behavioural economics has addressed the intricacies of decision-making, aiming to understand better how individuals actually behave (Terziev, 2020), in contrast to traditional economic theories, which assume that: (1) consumers should always act rationally, (2) consumers' choices should be related to expected utility theory, and (3) individuals should accurately update their beliefs and opinions based on the latest information received (Bogan, 2019; Arthur, 2021). Behavioural economics, which is significantly influenced by Kahneman and Tversky's (1979) prospect theory, has revealed the inconsistencies and irrationalities in human behaviour and decision-making. However, the principles of traditional economic theories frequently do not reflect the complexities of real-world economies (Dolderer et al., 2021).

One of the core tenets of traditional economic theories is the assumption of rationality. Classical and neoclassical economics posit that individuals act rationally, making decisions that maximise their utility or profit (Boland, 2020; Lawson, 2021). According to Feng et al. (2022), this assumption underlies many economic models, including supply and demand, market equilibrium, and consumer choice theory. However, real-world observations reveal that individuals often deviate from rational behaviour due to cognitive biases, emotions, and imperfect information (Leković, 2020; Yang et al., 2021).

Traditional economic theories often rely on the assumption of perfect competition, where numerous small firms compete, and no

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single entity has the power to influence prices or market outcomes (Boland, 2020; Lawson, 2021). In this idealised scenario, resources are allocated efficiently, and consumer welfare is maximised. However, many real-world markets are dominated by a few large firms with significant market power, leading to monopolistic or oligopolistic conditions (Patel, 2021). These firms can influence prices, restrict output, and create barriers to entry, resulting in outcomes that diverge from those predicted by perfect competition models (Ingrao and Sardoni, 2020). The tech industry, in the modern case, is characterised by a few dominant players who can shape market dynamics to their advantage, often at the expense of consumers and smaller competitors (Petit and Teece, 2021; Calvano and Polo, 2021).

It challenges the traditional concept of rationality by explaining why consumers frequently make decisions that diverge from rational expectations (Dibb et al., 2021; Visco and Zevi, 2020). According to El Harbi and Toumia (2020), phenomena such as status quo bias, overconfidence and risk aversion discover the fundamental psychological processes that shape economic decisions. This irrationality complicates the predictability of economic behaviour, making it difficult for policymakers and economists to design interventions that assume rational decisionmaking.

These issues related to the "economic behaviour" need to further investigate and consolidate in given more future study within this topic more complex and comprehensive, thus, conducting a bibliometric analysis is essential. Bibliometric analysis is a statistical method used to explore numerous scientific data, revealing the evolutionary dynamics of a specific research field and highlighting emerging trends within it (Donthu et al., 2021; Mohamad et al., 2024a).

This paper aims to address this gap with the following research questions:

- RQ1. What are the current publication trends in the field of behavioural economics, and how have they evolved over time?
- RQ2. Which articles are the most highly cited in the field of behavioural economics?
- RQ3. Who are the most productive authors in behavioural economics studies?
- RQ4. What are the key themes that emerge from co-occurrence analyses of author keywords in behavioural economics studies?
- RQ5. What is the future direction of behavioural economics?

This paper is organised as follows: The second section covers the existing literature, outlining the bibliometric methods used and previous scholars on behavioural economics. Then, the third section describes the research methodology, including the design and selection of documents. The fourth section presents the results of this paper, addressing the research questions. The next section discusses these findings and explores the paper's contributions to the field of behavioural economics. Finally, the conclusion summarises this paper, discusses its limitations, and offers recommendations for future research.

2. LITERATURE REVIEW

2.1. Bibliometric Analysis

Bibliometric analysis is a statistical or quantitative tool widely used to analyse academic literature (Donthu et al., 2021). Bibliometric analysis allows the researchers to study specific research field by analysing publication trends, source titles, highly cited documents, countries, affiliation, keywords, bibliographic coupling, co-authorship, co-occurrence, and co-citation in order to develop useful conclusions (Ahmi et al., 2020; Mohamad et al., 2024b).

2.2. Previous Studies

Table 1 summarises previous articles on the bibliometric analysis of behavioural economics, highlighting various domains, data sources and scope, total documents examined, and bibliometric indicators used. Costa et al. (2019) conducted a seminal bibliometric analysis that spans behavioural finance, behavioural economics, and behavioural accounting. By examining 2653 documents from the Web of Science (1967-2015), they provided a comprehensive overview of these interrelated fields. The study highlighted the growth of publications over time, identified highly cited articles, and mapped the citation networks of authors and journals. This broad approach set the stage for future bibliometric analyses, offering a foundational understanding of how these fields have evolved together.

Frid-Nielsen and Jensen (2021) narrowed their focus specifically to behavioural economics, analysing 1872 documents from the Web of Science (1956-2016). Their study is notable for its use of Reference Publication Year Spectroscopy (RPYS) to trace the intellectual roots of the field. The intersection of behavioural economics and artificial intelligence (AI) is a relatively new but rapidly growing area of research. Aoujil et al. (2023) explored this intersection by analysing 637 documents from the Web of Science (2012-2022). Their study employed advanced bibliometric techniques such as co-authorship and co-word network analysis, revealing emerging themes and trends in this interdisciplinary field. The integration of AI with behavioural economic theories represents a significant shift towards modern and technologydriven approaches in economic research.

Umer and Khan (2024) focused on the niche area of behavioural economics and climate change, analysing a small but significant dataset of 31 documents from Scopus (2008-2022). Despite the limited number of documents, their study provided deep insights into this emerging intersection, highlighting the potential of behavioural economics to address global challenges like climate change. Maitri (2022) conducted a broader bibliometric analysis of behavioural economics, covering 1665 documents from the Web of Science (1997-2021). Alba (2022) focused on the rise of behavioural economics within mainstream economic journals. Analysing 1147 documents from the Web of Science (1979-2021), Alba highlighted the increasing presence of behavioural economics in high-impact journals which consist of Lotka's law approach to calculate the author impact, identifying highly cited articles and trending topics within 1979-2021.

| Author (s) | Domain/search strategy | Data source | Total | Bibliometric contributions |
|-----------------------------------|--|------------------------------|-----------|---|
| | | and scope | documents | |
| Costa et al. (2019) | Behavioural finance, behavioural economics, and behavioural accounting | Web of Science, 1967-2015 | 2653 | Publication by year, highly cited articles, source title, countries, main keywords, subject area, citation network analysis, citation network of authors, and network of highly cited journals |
| Frid-Nielsen and Jensen (2021) | Behavioural economics | Web of Science, 1956-2016 | 1872 | Reference Publication Year Spectroscopy (RPYS) analysis, formative authors with highly cited articles, institutions, publication outlets, sub-clusters of scholars dealing with issues, the means of communication in the field in terms of central journals and books |
| Aoujil et al. (2023) | Behavioural economics and artificial intelligence | Web of Science, 2012-2022 | 637 | Production and citation trend, top 10 research areas, most productive authors, most productive journals, affiliations, countries, most cited articles, co-authorship analysis, co-citation analysis, cluster's keywords, keyword co-occurrence analysis, and co-word network analysis |
| Umer and Khan (2024) | Behavioural economics and climate change | Scopus, 2008-2022 | 31 | Publication and citation trends, highly cited articles, leading nine authors, affiliations, countries, leading outlets, funding agencies, keyword analysis, co-authorship analysis, bibliographic coupling, co-occurrence analysis, co-citation analysis |
| Maitri (2022) | Behavioural economics | Web of Science, 1997-2021 | 1665 | Document type, subject area, publication by year, affiliation, funding agencies, authors, and source title |
| Alba (2022) | Behavioural economics | Web of Science, 1979-2021 | 1147 | Publication by year, journal, most cited journal, authors, Lotka's law, highly cited articles, Reference Publication Year Spectroscopy (RPYS) analysis, countries, affiliations, keyword plus, author keywords, and trending topics by year |
| Jain et al. (2021) | Behavioural biases | Scopus, 1995-2020 | 212 | Analysis of countries, journal quality analysis, top 10 papers by local citation, Pagerank analysis, bibliographical coupling, research synthesis and future research |
| Ingale and Paluri (2022) | Financial literacy and financial behaviour | Web of Science, 1985-2020 | 2073 | Science mapping, descriptive analysis related to most relevant authors, most cited sources, source impact, most cited papers, and social network analysis |
| Singh (2021) | Behavioural finance and behavioural accounting | Scopus, 1973-2019 | 1739 | Citation structure, network analysis using VOSviewer, top 20 publications, top 22 authors, journals countries, and institutions |
| Paule-Vianez et al. (2020) | Behavioural Finance | Web of Science, 1987-2017 | 1214 | Evaluation of performance and scientific production, most cited articles, analysis of science mapping, performance of authors, most productive journals, productivity by country and organisation |
| Mesa-Vázquez et al. (2021) | Behavioural economics in agriculture | Scopus, 1991-2020 | 176 | Evolution of the research, subject areas, type of document, journal title, authors and countries related to behavioural economic in agriculture |

| Table 1: Previous articles o | n bibliometric anal | ysis of behavioural | economics |
|------------------------------|---------------------|---------------------|-----------|
|------------------------------|---------------------|---------------------|-----------|

Jain et al. (2021) offered a bibliometric analysis centred on behavioural biases, examining 212 documents from Scopus (1995-2020). This study is particularly relevant for understanding the micro-level mechanisms that underpin decision-making in behavioural economics. Singh (2021) provided a bibliometric analysis of behavioural finance and behavioural accounting, examining 1739 documents from Scopus (1973-2019). The focus on both finance and accounting within a behavioural framework underscored the versatility of behavioural economics in addressing various domains of economic activity. There is also a study that only focuses on the overview of behavioural economics in agriculture in the period between 1991 and 2020 (Mesa-Vázquez et al., 2021).

The intersection of financial literacy and financial behaviour is another area where behavioural economics plays a crucial role. Ingale and Paluri (2022) analysed 2073 documents from the Web of Science (1985-2020), focusing on science mapping and social network analysis. Their study highlighted the importance of financial literacy in shaping economic behaviour, emphasizing the role of behavioural insights in financial decision-making and education. Paule-Vianez et al. (2020) analysed the performance and productivity of research in behavioural finance, examining 1214 documents from the Web of Science (1987-2017). This analysis offered valuable insights into the academic and practical significance of behavioural finance within the broader context of behavioural economics.

From Table 1, the most similar studies are those by Frid-Nielsen and Jensen (2021) and Maitri (2022), both of which utilised the Web of Science database. This study indicates the use of Scopus database and more large and latest scope of years within 1965 until 2024 (April). Therefore, this study will fill the gap of "behavioural economics."

3. METHODS

This paper applies bibliometric analysis to understand the evolution of behavioural economics studies and determine the trends of publication within the field. The bibliometric analysis includes examining document and source types, subject areas, research trends, highly cited documents, the geographical distribution of publications, most productive authors, author keyword analysis, and other relevant factors (Ahmi et al., 2020; Alsharif et al., 2020; Foroudi et al., 2021).

3.1. Source and Data Collection

This paper, which sourced its data from Scopus, focused on topics related to behavioural economics. An initial search of the title field using the term "behavioural economics" yielded a total of 1817 documents. These documents were then screened for irrelevant, duplicated, erratum and retracted documents, resulting in the removal of 60 documents. Consequently, 1757 documents were included in the bibliometric analysis as shown in Figure 1. Those documents were exported into comma-separated value (CSV) format for analysis using Microsoft Excel, BiblioMagika (Ahmi, 2024), OpenRefine for cleaning the data and VOSviewer to conduct a visual mapping (Krause, 2021; Bukar et al., 2023).

4. ANALYSIS AND RESULTS

4.1. Document Attributes

Data from the Scopus websites are analysed by document and source type. As shown in Table 2, the document types on behavioural economics include articles, book chapters, reviews, conference papers, books, editorials, notes, letters, and short surveys. According to Table 2, articles are the most common document type, accounting for 1007 (57.31%) of the total, followed by book chapters (n=263; 14.97%) and reviews (n=185; 10.53%).

Table 3 shows how published documents from Scopus are classified into five sources: Journals, books, conference proceedings, book series, and trade journals. According to Table 3, journals are the most common source type, accounting for 1341 published documents (76.32%), followed by books (n=304, 17.30%) and conference proceedings (n=71; 4.04%).

4.2. Subject Area

This paper also examines published documents based on the subject area, as shown in Table 4. According to Table 4, there are 601 documents observed primarily in the field of economics, econometrics, and finance, followed by medicine (534 documents), and social sciences (439 documents). It is noted that the publications are grouped based on source title classification. Therefore, some source titles are classified in more than one subject area.

4.3. Publication Trajectory

Table 5 presents an analysis of research productivity based on the number of documents produced per year from 1965 to 2024. In the



Table 2: Document type

| Document type | Total publications | Percentage |
|-------------------|---------------------------|------------|
| Articles | 1007 | 57.31 |
| Book Chapters | 263 | 14.97 |
| Reviews | 185 | 10.53 |
| Conference Papers | 108 | 6.15 |
| Books | 60 | 3.41 |
| Editorials | 53 | 3.02 |
| Notes | 53 | 3.02 |
| Letters | 14 | 0.80 |
| Short Surveys | 14 | 0.80 |
| Total | 1757 | 100.00 |

Table 3: Source type

| Source type | Total publications | Percentage |
|------------------------|---------------------------|------------|
| Journals | 1341 | 76.32 |
| Books | 304 | 17.30 |
| Conference proceedings | 71 | 4.04 |
| Book series | 40 | 2.28 |
| Trade journals | 1 | 0.06 |
| Total | 1757 | 100.00 |

early years (1965-1980s), there were very few publications and citations. From the 1990s onwards, the number of publications and citations increased significantly. The peak was in 2021 with 148 publications, but recent years (2021-2024) have seen a decrease in both publications and citations.

Figure 2 displays the trend fluctuation in behavioural economics studies from 1965 to 2024, showing the total number of publications and citations received. There was a notable peak in total citations, reaching 4520 in 2003, indicating a significant surge in interest and impact in the field of behavioural economics. The

Table 4: Subject area

| Subject area | Total publications |
|--|---------------------------|
| Economics, econometrics and finance | 601 |
| Medicine | 534 |
| Social sciences | 439 |
| Business, management and accounting | 343 |
| Psychology | 273 |
| Pharmacology, toxicology and pharmaceutics | 133 |
| Arts and humanities | 110 |
| Computer science | 92 |
| Engineering | 85 |
| Neuroscience | 71 |
| Environmental science | 67 |
| Agricultural and biological sciences | 44 |
| Nursing | 43 |
| Decision sciences | 40 |
| Mathematics | 31 |
| Energy | 25 |
| Biochemistry, genetics and molecular biology | 23 |
| Multidisciplinary | 23 |
| Health professions | 14 |
| Immunology and microbiology | 10 |
| Earth and planetary sciences | 7 |
| Dentistry | 4 |
| Materials science | 4 |
| Physics and astronomy | 4 |
| Veterinary | 4 |
| Chemical engineering | 3 |
| Chemistry | 3 |

Figure 2: Total publications and citations by year



year with the most publications is 2021, with 148 publications, highlighting the peak of research activity in this area.

4.4. Highly Cited Documents

Table 6 shows the top 10 highly cited documents from the Scopus database. Kahneman's (2003) paper, "Maps of bounded rationality: Psychology for behavioural economics" received the most citations, with 3075 citations, averaging 139.77 citations per year.

4.5. Top 10 Most Productive Authors

Table 7 depicts the top 10 most productive authors in behavioural economics studies. James G. Murphy is the most productive author, with 54 publications on the topic of behavioural economics. Warren K. Bickel ranked as the second most productive author (49 publications), and James MacKillop ranked third (39 publications). Based on the total number of citations, Warren

K. Bickel ranked first with 4018 citations, followed by James MacKillop with 2359 citations, and James G. Murphy with 2212 citations.

4.6. Distribution of Publications by Countries and Institutions

Figure 3 depicts that the researchers from 79 different countries contributed to behavioural economics studies based on the number of publications. The United States is the most productive country, contributing 1012 publications to the research topic, followed by the United Kingdom with 174 publications, and Germany with 92 publications. Additionally, Table 8 displays the top 10 most productive institutions based on their published research in behavioural economics studies. Through bibliometric analysis, this paper discovers that a total of 1055 institutions contributed to the research topic. According to Table 8, the University of California, United States, is the leading institution with a total of 74 publications, followed by the University of Pennsylvania with 73 publications and Harvard University with 56 publications.

4.7. Author Keywords Analysis

Figure 4 depicts a network visualisation of author keywords created using VOSviewer. In this paper, there are 2604 author keywords used in the selected documents. This paper sets a minimum threshold of 10 occurrences for author keywords to be included in the visualisation, resulting in 53 author keywords meeting this criterion. The cluster analysis of author keywords in behavioural economics research, as visualised in Figure 4, reveals five distinct clusters, each representing a thematic area within the field. These clusters highlight the interconnections between different research topics and provide insights into the dominant themes and emerging trends in behavioural economics.

Table 9 shows the red cluster focusing primarily on the intersection between substance use and behavioural economics, comprising keywords like "cannabis," "cocaine," "smoking," "demand," and "purchase task." This is similar to the study by Roz et al. (2021), the theme of this cluster is centred on understanding how economic principles and behavioural theories apply to substance use behaviours, such as addiction, demand curves, and the economic implications of drug self-administration. The high occurrence and link strength of terms like "demand" and "purchase task" suggest that these concepts are crucial in exploring the economic dimensions of substance use.

The green cluster is characterised by keywords related to decisionmaking processes and their economic implications. Key terms such as "decision-making," "economics," "bounded rationality," and "cognitive biases" dominate this cluster. The focus here is on how individuals make economic decisions, influenced by cognitive limitations and biases (Acciarini et al., 2021). The term "decisionmaking" has the highest occurrence and link strength in this cluster, underscoring its central role in behavioural economics. This cluster also includes emerging areas like "neuroeconomics" and the impact of global events, as evidenced by the inclusion of "coronavirus."

The blue cluster revolves around behavioural biases and their effects on economic decisions. Keywords like "biases," "heuristics," Table 5: Publication by year

| Year | TP | NCA | NCP | TC | C/P | C/CP | h | g | m |
|-------|------|------|------|-------|--------|--------|----|-----|------|
| 1965 | 1 | 1 | 0 | 0 | 0.00 | 0.00 | 0 | 0 | 0.00 |
| 1967 | 1 | 2 | 1 | 13 | 13.00 | 13.00 | 1 | 1 | 0.02 |
| 1972 | 1 | 2 | 1 | 45 | 45.00 | 45.00 | 1 | 1 | 0.02 |
| 1981 | 1 | 0 | 0 | 0 | 0.00 | 0.00 | 0 | 0 | 0.00 |
| 1982 | 2 | 3 | 2 | 90 | 45.00 | 45.00 | 2 | 2 | 0.05 |
| 1984 | 3 | 5 | 3 | 446 | 148.67 | 148.67 | 3 | 3 | 0.07 |
| 1986 | 2 | 2 | 2 | 13 | 6.50 | 6.50 | 2 | 2 | 0.05 |
| 1987 | 1 | 1 | 1 | 3 | 3.00 | 3.00 | 1 | 1 | 0.03 |
| 1988 | 1 | 5 | 1 | 48 | 48.00 | 48.00 | 1 | 1 | 0.03 |
| 1989 | 1 | 1 | 1 | 4 | 4.00 | 4.00 | 1 | 1 | 0.03 |
| 1990 | 2 | 6 | 2 | 261 | 130.50 | 130.50 | 2 | 2 | 0.06 |
| 1991 | 6 | 18 | 5 | 539 | 89.83 | 107.80 | 5 | 6 | 0.15 |
| 1992 | 3 | 9 | 2 | 110 | 36.67 | 55.00 | 2 | 3 | 0.06 |
| 1993 | 5 | 12 | 3 | 252 | 50.40 | 84.00 | 3 | 5 | 0.09 |
| 1994 | 2 | 5 | 2 | 94 | 47.00 | 47.00 | 2 | 2 | 0.06 |
| 1995 | 7 | 19 | 7 | 405 | 57.86 | 57.86 | 7 | 7 | 0.23 |
| 1996 | 2 | 5 | 2 | 71 | 35.50 | 35.50 | 2 | 2 | 0.07 |
| 1997 | 4 | 11 | 4 | 141 | 35.25 | 35.25 | 4 | 4 | 0.14 |
| 1998 | 9 | 14 | 9 | 603 | 67.00 | 67.00 | 7 | 9 | 0.26 |
| 1999 | 9 | 18 | 9 | 802 | 89.11 | 89.11 | 9 | 9 | 0.35 |
| 2000 | 6 | 13 | 6 | 301 | 50.17 | 50.17 | 4 | 6 | 0.16 |
| 2001 | 7 | 15 | 7 | 1040 | 148.57 | 148.57 | 6 | 7 | 0.25 |
| 2002 | 6 | 15 | 5 | 525 | 87.50 | 105.00 | 5 | 6 | 0.22 |
| 2003 | 19 | 34 | 19 | 4520 | 237.89 | 237.89 | 13 | 19 | 0.59 |
| 2004 | 18 | 33 | 15 | 2231 | 123.94 | 148.73 | 9 | 18 | 0.43 |
| 2005 | 13 | 33 | 13 | 330 | 25.38 | 25.38 | 8 | 13 | 0.40 |
| 2006 | 31 | 59 | 27 | 1722 | 55.55 | 63.78 | 17 | 31 | 0.89 |
| 2007 | 28 | 60 | 25 | 779 | 27.82 | 31.16 | 13 | 27 | 0.72 |
| 2008 | 22 | 39 | 19 | 685 | 31.14 | 36.05 | 12 | 22 | 0.71 |
| 2009 | 24 | 52 | 21 | 1021 | 42.54 | 48.62 | 14 | 24 | 0.88 |
| 2010 | 63 | 119 | 54 | 934 | 14.83 | 17.30 | 19 | 28 | 1.27 |
| 2011 | 64 | 115 | 50 | 2123 | 33.17 | 42.46 | 19 | 46 | 1.36 |
| 2012 | 70 | 167 | 62 | 2403 | 34.33 | 38.76 | 28 | 48 | 2.15 |
| 2013 | 78 | 179 | 68 | 2381 | 30.53 | 35.01 | 28 | 48 | 2.33 |
| 2014 | 71 | 153 | 64 | 2237 | 31.51 | 34.95 | 23 | 46 | 2.09 |
| 2015 | 127 | 322 | 112 | 3359 | 26.45 | 29.99 | 28 | 56 | 2.80 |
| 2016 | 107 | 292 | 95 | 2389 | 22.33 | 25.15 | 22 | 46 | 2.44 |
| 2017 | 128 | 286 | 101 | 1383 | 10.80 | 13.69 | 23 | 32 | 2.88 |
| 2018 | 121 | 396 | 102 | 1598 | 13.21 | 15.67 | 22 | 35 | 3.14 |
| 2019 | 134 | 412 | 112 | 1618 | 12.07 | 14.45 | 20 | 34 | 3.33 |
| 2020 | 120 | 400 | 98 | 1181 | 9.84 | 12.05 | 17 | 28 | 3.40 |
| 2021 | 148 | 593 | 111 | 632 | 4.27 | 5.69 | 11 | 17 | 2.75 |
| 2022 | 139 | 528 | 90 | 377 | 2.71 | 4.19 | 9 | 12 | 3.00 |
| 2023 | 123 | 547 | 47 | 84 | 0.68 | 1.79 | 4 | 4 | 2.00 |
| 2024 | 27 | 122 | 2 | 6 | 0.22 | 3.00 | 2 | 2 | 2.00 |
| Total | 1757 | 5123 | 1382 | 39799 | 22.65 | 28.80 | 90 | 159 | 1.50 |

TP: Total number of publications, NCA: Number of contributing authors, NCP: Number of cited publications, TC: Total citations, C/P: Average citations per publication, C/CP: Average citations per cited publication, h: h-index, g: g-index, m: m-index

"framing," "loss aversion," and "nudge" are prominent in this cluster. The concept of "nudge," which has the highest total link strength, indicates its significant influence in shaping economic behaviours through subtle changes in choice architecture, which is similar to the results by Ewert (2020) and Victor et al. (2023). This cluster also highlights foundational theories such as "prospect theory" and "mental accounting," which have been instrumental in explaining deviations from traditional economic models based on rational choice.

This cluster is centred on health-related topics and the application of behavioural economics in designing interventions. Keywords such as "behavioural change," "incentives," "obesity," "HIV," and "randomised controlled trials" indicate a focus on how economic incentives and behavioural interventions can influence health outcomes (Pinkney et al., 2020). The occurrence of terms like "behavioural economics" and "behavioural change" reflects the broader application of behavioural economics principles in public health initiatives and policymaking.

The purple cluster is specifically focused on alcohol use and its related behaviours. Key terms in this cluster include "alcohol," "college students," "delay discounting," and "impulsivity." The presence of "delay discounting" and "impulsivity" suggests that this cluster examines the behavioural economic factors that contribute to alcohol consumption and related risky behaviours (Roz et al., 2021). The focus on "college students" highlights the demographic group most studied within this thematic area.

Table 6: Top 10 highly cited documents

| No. | Authors | Title | Source title | Cites | Cites/ year |
|-----|--------------------------------|---|---|-------|----------------|
| 1 | Kahneman (2003) | Maps of bounded rationality: Psychology for behavioural economics | American Economic Review | 3075 | 139.77 |
| 2 | Thaler and Benartzi (2004) | Save more tomorrow: Using behavioural economics to increase employee saving | Journal of Political Economy | 1316 | 62.67 |
| 3 | Bickel and Marsch (2001) | Toward a behavioural economic understanding of drug dependence: Delay discounting processes | Addiction | 866 | 36.08 |
| 4 | Camerer et al. (2003) | Regulation for conservatives: Behavioural economics and the case for "asymmetric paternalism" | University of Pennsylvania Law Review | 758 | 34.45 |
| 5 | Frederiks et al. (2015) | Household energy use: Applying behavioural economics to understand consumer decision-making and behaviour | Renewable and Sustainable Energy Reviews | 602 | 60.20 |
| 6 | Camerer et al. (2011) | Advances in behavioural economics | Advances in Behavioural Economics | 599 | 42.79 |
| 7 | Bickel et al. (2014) | The behavioural economics of substance use disorders: Reinforcement pathologies and their repair | Annual Review of Clinical Psychology | 459 | 41.73 |
| 8 | Hursh (1984) | Behavioural economics | Journal of the Experimental Analysis of Behaviour | 424 | 10.34 |
| 9 | Camerer and Loewenstein (2011) | Behavioural economics: Past, present, future | Advances in Behavioural Economics | 408 | 29.14 |
| 10 | Slovic et al. (2002) | Rational actors or rational fools: Implications of the effects heuristic for behavioural economics | Journal of Socioeconomics | 377 | 16.39 |

Table 7: Top 10 most productive authors

| Author's full name | ТР | NCP | ТС | C/P | C/CP | h | g | m | PYS |
|------------------------|----|-----|------|-------|-------|----|----|-------|------|
| James G. Murphy | 54 | 51 | 2212 | 40.96 | 43.37 | 23 | 47 | 1.278 | 2007 |
| Warren K. Bickel. | 49 | 47 | 4018 | 82.00 | 85.49 | 30 | 49 | 0.857 | 1990 |
| James MacKillop | 39 | 37 | 2359 | 60.49 | 63.76 | 25 | 39 | 1.389 | 2007 |
| Steven R. Hursh | 25 | 24 | 1423 | 56.92 | 59.29 | 17 | 25 | 0.415 | 1984 |
| Derek D. Reed | 22 | 21 | 414 | 18.82 | 19.71 | 11 | 20 | 0.917 | 2013 |
| Kevin G. Volpp | 20 | 16 | 811 | 40.55 | 50.69 | 11 | 20 | 0.786 | 2011 |
| Ashley A. Dennhardt | 19 | 18 | 649 | 34.16 | 36.06 | 12 | 19 | 0.923 | 2012 |
| Sebastian L. Linnemayr | 18 | 14 | 207 | 11.50 | 14.79 | 9 | 14 | 0.900 | 2015 |
| Michael T. Amlung | 17 | 17 | 504 | 29.65 | 29.65 | 11 | 17 | 1.000 | 2014 |
| Jalie A. Tucker | 17 | 17 | 423 | 24.88 | 24.88 | 11 | 17 | 0.393 | 1997 |

TP: Total number of publications, NCP: Number of cited publications, TC: Total citations, C/P: Average citations per publication, C/CP: Average citations per cited publication, h: h-index, g: g-index, m: m-index, PYS: Publication year start

Figure 3: Worldwide production of behavioural economics research



Table 8: Top 10 most productive institutions

| Institution | Country | ТР | NCP | TC | C/P | C/CP | PYS |
|---|----------------|----|-----|------|-------|-------|------|
| University of California | United States | 74 | 59 | 4919 | 66.47 | 83.37 | 2003 |
| University of Pennsylvania | United States | 73 | 61 | 1437 | 19.68 | 23.56 | 1995 |
| Harvard University | United States | 56 | 48 | 2624 | 46.86 | 54.67 | 1995 |
| University of Memphis | United States | 52 | 49 | 1867 | 35.90 | 38.10 | 2007 |
| Johns Hopkins University | United States | 40 | 35 | 1031 | 25.78 | 29.46 | 2005 |
| Brown University | United States | 38 | 34 | 1581 | 41.61 | 46.50 | 2007 |
| University of Vermont | United States | 32 | 30 | 2821 | 88.16 | 94.03 | 1990 |
| Virginia Polytechnic Institute and State University | United States | 31 | 30 | 1413 | 45.58 | 47.10 | 1982 |
| University of London | United Kingdom | 30 | 27 | 709 | 23.63 | 26.26 | 2002 |
| New York University | United States | 29 | 21 | 449 | 15.48 | 21.38 | 2008 |

TP: Total number of publications, NCP: Number of cited publications, TC: Total citations, C/P: Average citations per publication, C/CP: Average citations per cited publication, PYS: Publication year start



Figure 4: Mapping of author keywords in behavioural economics research

5. DISCUSSIONS

This paper utilises bibliometric analysis to provide a comprehensive overview of publications related to behavioural economics research from 1965 to 2024, with the aim of understanding current trends and their evolution over time (RQ1). The analysis reveals a notable peak in total citations, reaching 4520 in 2003. This peak indicates a surge in awareness and recognition of behavioural economics during that period, which likely encourages more researchers to cite existing work. Additionally, the relevance of behavioural economics concepts and findings across various fields such as marketing, public health, and policymaking may have contributed to increased citations. However, from 2021 to 2024, there has been a slight decrease in both the number of publications and citations. This decrease may be attributed to the impact of the COVID-19 pandemic, which disrupted research activities and academic publishing, leading to delays and a temporary decline in research output.

This paper also identifies the most highly cited documents in the field of behavioural economics (RQ2). Kahneman's (2003) paper, "Maps of Bounded Rationality: Psychology for Behavioural Economics," received the highest number of citations, with 3075 citations, averaging 139.77 citations per year. The high citation count of Kahneman's paper demonstrates its significant influence and foundational importance in behavioural economics studies.

Its consistent citation rate over the years highlights its ongoing relevance and impact in shaping research and understanding in the field.

Moreover, this paper also indicates the most productive authors in behavioural economics studies (RQ3). James G. Murphy is the most prolific author in behavioural economics with 54 publications, demonstrating his active research and dedication to advancing the field. Despite having fewer publications (49 publications), Warren K. Bickel is the most influential author, with 4018 citations, highlighting the significant impact and wide recognition of his work among other researchers.

Lastly, this paper also explores the key themes that emerge from co-occurrence analyses of author keywords in behavioural economics studies. The cluster analysis of author keywords in behavioural economics research offers a comprehensive view of the field's structure and thematic areas. The identified clusters of substance use, decision-making, behavioural biases, health interventions, and alcohol-related behaviours reflect the diversity and depth of research in behavioural economics. Each cluster provides a unique lens through which researchers explore how economic principles and behavioural theories intersect, offering valuable insights for further investigation and application in policymaking, public health, and other domains.

Table 9: Author keywords

| Author keywords | Cluster | Link | Total link strength | Occurrences | Theme |
|------------------------------|---------|------|---------------------|-------------|----------------------------------|
| Cannabis | 1 | 10 | 29 | 12 | Red cluster (Substance use and |
| Choices | 1 | 17 | 31 | 13 | behavioural economics) |
| Cigarettes | 1 | 9 | 30 | 12 | |
| Cocaine | 1 | 14 | 37 | 11 | |
| Demand | 1 | 22 | 100 | 46 | |
| Demand curves | 1 | 18 | 55 | 25 | |
| Drug self-administration | 1 | 9 | 21 | 10 | |
| Human | 1 | 18 | 42 | 15 | |
| Motivation | 1 | 10 | 15 | 10 | |
| Public policy | 1 | 10 | 23 | 11 | |
| Purchase task | 1 | 12 | 41 | 19 | |
| Reinforcement | 1 | 19 | 41 | 13 | |
| Self-administration | 1 | 11 | 27 | 11 | |
| Smoking | 1 | 11 | 31 | 12 | |
| Substitutes | 1 | 12 | 25 | 10 | |
| Behaviour | 2 | 13 | 28 | 20 | Green cluster (Decision-making |
| Bounded rationality | 2 | 18 | 64 | 31 | and behavioural economics) |
| Cognitive biases | 2 | 12 | 30 | 16 | |
| Consumer behaviour | 2 | 11 | 21 | 12 | |
| Coronavirus | 2 | 7 | 10 | 15 | |
| Decision-making | 2 | 27 | 112 | 60 | |
| Economics | 2 | 26 | 86 | 44 | |
| Evonomics | 2 | 10 | 26 | 17 | |
| Experimental economics | 2 | 10 | 20 | 17 | |
| Neuroaconomica | 2 | 20 | 24 | 10 | |
| Psychology | 2 | 20 | 59 | 10 | |
| Patienal abaiaa | 2 | 10 | 22 | 50 | |
| Rational choice | 2 | 12 | 23 55 | 11 | |
| Rationality | 2 | 20 | 33 91 | 20 | |
| Blases | 3 | 20 | 81 | 29 | Blue cluster (Behavioural biases |
| Choice architecture | 3 | 12 | 29 | 13 | and their influences) |
| Endowment effect | 3 | 10 | 27 | 11 | |
| Framing | 3 | 18 | 59 | 1/ | |
| Heuristics | 3 | 20 | 96 | 31 | |
| Libertarian paternalism | 3 | 9 | 25 | 11 | |
| Loss aversion | 3 | 12 | 35 | 18 | |
| Mental accounting | 3 | 12 | 39 | 12 | |
| Nudge | 3 | 32 | 142 | 71 | |
| Obesity | 3 | 10 | 25 | 16 | |
| Prospect theory | 3 | 17 | 84 | 37 | |
| Adolescents | 4 | 11 | 24 | 13 | Yellow cluster (Health and |
| Behavioural change | 4 | 9 | 28 | 16 | behavioural interventions) |
| Behavioural economics | 4 | 52 | 777 | 778 | |
| Financial incentives | 4 | 4 | 15 | 15 | |
| HIV | 4 | 7 | 17 | 11 | |
| Incentives | 4 | 14 | 29 | 21 | |
| Interventions | 4 | 6 | 16 | 10 | |
| Prevention | 4 | 6 | 15 | 11 | |
| Randomised controlled trials | 4 | 8 | 21 | 12 | |
| Alcohol | 5 | 17 | 80 | 40 | Purple cluster (Alcohol and |
| Alcohol demand | 5 | 7 | 23 | 13 | Related Behaviours) |
| College students | 5 | 10 | 32 | 16 | |
| Delay discounting | 5 | 16 | 65 | 28 | |
| Impulsivity | 5 | 8 | 25 | 12 | |

6. FUTURE DIRECTIONS IN BEHAVIOURAL ECONOMICS: EXPANDING THE HORIZONS OF HUMAN DECISION-MAKING

Behavioural economics, a field that merges insights from psychology and economics to understand how individuals make decisions, has witnessed significant growth over the past few decades. As research in this area continues to evolve, new themes and areas of focus are emerging, providing fertile ground for future exploration. There are 2 clusters (green and blue cluster) from Figure 4, which would give a critical future direction. The green cluster, characterised by keywords related to decision-making processes and their economic implications, highlights a core area of behavioural economics research. Key terms such as "decisionmaking," "economics," "bounded rationality," and "cognitive biases" dominate this cluster, reflecting the field's focus on how individuals make economic decisions in the presence of cognitive limitations and biases (Berthet, 2022).

One promising direction for future research in this area is the exploration of neuroeconomics, which seeks to understand the neural mechanisms underlying economic decision-making. As our understanding of the brain continues to evolve, integrating neuroscience with behavioural economics could lead to new insights into how cognitive biases influence decision-making processes (Acciarini et al., 2021; Zhang et al., 2022). Furthermore, the inclusion of "coronavirus" in this cluster suggests that global events have a significant impact on economic behaviours, providing another avenue for future research (Dörr et al., 2022; Ahmad et al., 2022). Investigating how crises, such as COVID-19 pandemics, influence decision-making could yield valuable insights for policymakers and businesses alike (Rubin et al., 2021; Hussain and Hussain, 2024).

The blue cluster revolves around behavioural biases and their effects on economic decisions, with keywords like "biases," "heuristics," "framing," "loss aversion," and "nudge" playing a central role. The concept of "nudge," which has the highest total link strength in this cluster, highlights its importance in shaping economic behaviours through subtle changes in choice architecture. As the application of nudge theory continues to grow, future research could explore its effectiveness in diverse contexts, such as environmental conservation, financial decision-making, and public health (Espinosa et al., 2022).

Additionally, there is a need to examine the long-term effects of nudges on behaviour, as well as their ethical implications. The foundational theories in this cluster, such as "prospect theory" and "mental accounting," also provide a strong basis for future research aimed at refining our understanding of how individuals deviate from traditional economic models based on rational choice (Agudelo Aguirre and Agudelo Aguirre, 2024). Therefore, as behavioural economics continues to evolve, future research should focus on exploring the neural underpinnings of decision-making and expanding the application of behavioural interventions to address pressing global challenges.

7. CONCLUSIONS

This bibliometric analysis provides a detailed overview of the evolution and current state of behavioural economics, highlighting its substantial influence across multiple disciplines. The findings illustrate the field's growth, with significant contributions from key scholars and foundational works that have shaped its trajectory. The identification of emerging themes, particularly in areas such as decision-making, behavioural biases, and health interventions, underscores the interdisciplinary nature of behavioural economics and its applicability to real-world challenges.

However, while the analysis paints a broad picture of the field's development, it also reveals several critical gaps and limitations that need to be addressed. Despite the growing body of literature, behavioural economics remains at risk of becoming fragmented due to the increasing specialisation within its subfields. The clustering of research into distinct thematic areas, while valuable, may inadvertently silo knowledge and hinder cross-disciplinary integration. For instance, while research on substance use and behavioural biases both draw on core principles of behavioural economics, they often operate in isolation, limiting the potential for holistic insights that could emerge from greater interdisciplinary collaboration.

Moreover, the reliance on traditional citation metrics as indicators of influence may obscure the real impact of research, particularly in a field where practical applications and policy implications are paramount. Highly cited works may not always correspond to the most innovative or socially relevant research, raising concerns about the alignment of academic incentives with the field's broader goals. Another critical issue is the temporal scope of the analysis, which, despite covering nearly six decades, may not adequately capture the rapid shifts in the field driven by technological advancements and global challenges. The recent decline in publication and citation rates, partly attributed to the COVID-19 pandemic, also suggests that the field's momentum may be vulnerable to external shocks. This raises important questions about the resilience of behavioural economics as a research domain and its ability to adapt to new realities. Despite the comprehensive nature of this analysis, there is still a limitation that must be acknowledged. The reliance on Scopus databases only is the context focus of this study. Future research should consider incorporating a more diverse range of databases and sources to capture a broader spectrum of research contributions.

In conclusion, while this bibliometric analysis provides valuable insights into the development of behavioural economics, it also highlights the need for more critical reflection on the field's trajectory. To advance behavioural economics, future research must address the challenges of fragmentation, rethink the reliance on traditional metrics of impact, and strive for greater inclusivity and adaptability in the face of global and technological shifts. Only by confronting these issues can the field continue to evolve and make meaningful contributions to understanding and shaping economic behaviour in an increasingly complex world.

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