

Integrating Neuroeconomic Insights into the Islamic Economic Decision-Making Model

Alfina Rahmatia*

Islamic Economics and Banking Participation, Social Science Institute, Bursa Uludag University, Turkey
rahmatiaalfina@gmail.com

Arief Dwi Saputra

Business Administration, Social Science Institute, Bursa Technical University, Turkey;
Management Department, Faculty of Economic and Business, Universitas Muhammadiyah
Yogyakarta, Indonesia
ariefdwisaputra18@gmail.com

**Corresponding author*

Received: 16 December 2025 | Revised: 11 June 2026 | Published: 30 June 2026

Abstract

Neuroeconomics integrates economics, neuroscience, and psychology to offer empirical insights into human decision-making processes by linking neural activity with preference and risk assessment. Despite its rapid development in conventional economics, its synthesis with Islamic economic principles remains profoundly underexplored. This study aims to bridge this gap by mapping the global neuroeconomic research trends from 2004 to 2024 and integrating these empirical findings into an Islamic economic decision-making model. Employing a mixed-methods design, this study conducts a bibliometric analysis of 718 Scopus-indexed documents using VOSviewer and a sentiment analysis via NVivo 12, supplemented by an interpretive qualitative synthesis. The empirical findings reveal a fluctuating publication trend peaking in 2010, alongside a dominant narrative characterized by cautious skepticism regarding methodological boundaries. The qualitative integration demonstrates that neurobiological mechanisms governing bounded rationality, risk aversion, and prosocial reward systems strongly reinforce Islamic moral imperatives. Specifically, altruistic acts like Zakat activate neural reward pathways, validating the biological basis of *maslahah* (public interest). This study provides a novel conceptual framework that aligns frontline neuroscience with an ancient ethical system, offering policy implications for designing culturally congruent and socially responsible Islamic financial products.

Keywords: Neuroeconomics; Islamic Economics; Decision-Making

Abstrak

Neuroekonomi mengintegrasikan ekonomi, ilmu saraf, dan psikologi untuk menawarkan wawasan empiris tentang proses pengambilan keputusan manusia dengan menghubungkan aktivitas saraf dengan preferensi dan penilaian risiko. Terlepas dari perkembangannya yang pesat dalam ekonomi konvensional, sintesisnya dengan prinsip-prinsip ekonomi Islam masih sangat kurang dieksplorasi. Studi ini bertujuan untuk menjembatani kesenjangan ini dengan memetakan tren penelitian neuroekonomi global dari tahun 2004 hingga 2024 dan mengintegrasikan temuan empiris ini ke dalam model pengambilan keputusan ekonomi Islam. Dengan menggunakan desain metode campuran, studi ini melakukan analisis bibliometrik terhadap 718 dokumen yang diindeks Scopus menggunakan VOSviewer dan analisis sentimen melalui NVivo 12, dilengkapi dengan sintesis kualitatif interpretatif. Temuan empiris mengungkapkan tren publikasi yang berfluktuasi yang mencapai puncaknya pada tahun 2010, bersamaan dengan narasi dominan yang dicirikan oleh skeptisisme yang hati-hati mengenai batasan metodologis. Integrasi kualitatif menunjukkan bahwa mekanisme neurobiologis yang mengatur rasionalitas terbatas, penghindaran risiko, dan sistem penghargaan prososial sangat

memperkuat imperatif moral Islam. Secara khusus, tindakan altruistik seperti Zakat mengaktifkan jalur penghargaan saraf, memvalidasi dasar biologis Masalahah (kepentingan umum). Studi ini menyediakan kerangka konseptual baru yang menyelaraskan ilmu saraf terdepan dengan sistem etika kuno, menawarkan implikasi kebijakan untuk merancang produk keuangan Islam yang sesuai secara budaya dan bertanggung jawab secara sosial.

Kata kunci: Neuroekonomi; Ekonomi Islam; Pengambilan Keputusan

INTRODUCTION

Neuroeconomics is an interdisciplinary field, drawing on the leading-edge advances of neuroscience, psychology, and economics to open new pathways toward understanding human decision-making behavior (Pärnamets et al., 2020; Smith, 2023). Neuroeconomics will explain brain activity related to choice; it will therefore be expected to shed light on the basic mechanisms driving human preference, risk-taking behavior, ethical behavior, and social interactions (Bashir et al., 2022; Grassi et al., 2015; Ryan, 2017). This new field has the potential to unravel some of the complexities of economic behavior and may reveal neural underpinnings that drive market, social, and personal finance decision-making behavior (Glimcher, 2014). At the same time, neuroeconomics has rapidly developed to include advanced applications in understanding human behaviors in markets, social contexts, and personal finance (Beytollahi, 2020). The implications of neuroeconomics on the Islamic economy's varying cultural and religious framework are one example of an underexplored yet vitally important avenue of research.

Islamic economics is the economic methodology derived from ethical principles and a moral framework inspired by the Quran and Hadith (Kanbir & Dikkaya, 2021). Islamic economics' main purposes are to establish justice, ensure equitable distribution of income and wealth, and promote human welfare. Zakah or obligatory almsgiving, prohibition on collection and payment of interest (*riba*), and ethics and morals in business dealings provide the overall approach towards an economic undertaking, different from merely materialistic drudgery (Sudrajat, 2023; Zulkepli et al., 2024). This research may delineate how the neuroeconomic findings could support, contradict, and enhance Islamic economic teachings by exploring the points of intersection between neuroeconomics and Islamic economics.

Integrating neuroeconomic research and Islamic economic principles would widen the scope of motivational factors and behavior across people in Muslim-dominated societies and beyond. For instance, neuroeconomics could provide empirical evidence on how emotions, cognition, and social norms influence ethical decision-making (Verweij & Damasio, 2024), a core tenet of Islamic economics. The knowledge of reward systems in the brain and their effects on charitable giving (Solway & Botvinick, 2012) could give a scientific grounding to Islamic ideals of social welfare and wealth redistribution through institutions such as zakat and *sadaqah*.

Therefore, this study maps and analyzes the global neuroeconomic study trends using a mixed methods approach that integrates bibliometric analysis,

sentiment analysis, and qualitative integration, and then focuses on its relevance to Islamic economic ethics. The bibliometric analysis shall then be performed to quantitatively portray the most influential publications, research networks, and emerging topics of neuroeconomics (Aoujil et al., 2023). Sentiment analysis reviews the opinions and emotional underlying tone appearing in the literature on neuroeconomics, bringing into light how the implications of this novel field are perceived by the scholarly community (Wankhade et al., 2022). This would create an overall picture of the state of the field and where Islam converges with Islamic economic principles.

Ethical conduct plays the most important role in an Islamic economy, as it requires that all economic activities be based on justice, trustworthiness, and fairness (Javaid & Ul Hassan, 2013). Understanding neuroeconomic research about moral decision-making provides insights into the neural activities driving individuals to behave ethically or unethically (De Oliveira et al., 2015; Huddle, 2010). This study analyzes how neuroeconomic insights into moral decision-making align with or contradict Islamic moral imperatives, with a view to policy design aimed at improving ethical behaviors relevant to Muslim societies' economic problems. Risk and uncertainty are two critical concepts within neuroeconomics and Islamic economics. Neuroeconomic research on risk perception and decision-making produces empirical data on how people perceive risk and make financial decisions (Beytollahi, 2020; Sepúlveda et al., 2017). Islamic economics, however, prohibits excessive uncertainty (*gharar*) and activities similar to gambling (Kalkavan et al., 2021). It draws upon a principle of praiseworthy risk-taking combined with ethical conduct. This research will find out how neuroscience-based economics findings fit or contradict the natural predisposition of Islamic financial principles as reflected in human neural activities.

While neuroeconomics has successfully challenged the conventional neoclassical paradigm of the "fully rational actor" by proving that cognitive biases, emotions, and neural constraints drive human choices (Camerer, 2013; Landry & Webb, 2021) an outstanding academic debate persists regarding how deeply deep-seated cultural and religious values alter these neural processes. Conventional neuroeconomics operates largely under a secular materialistic framework. Conversely, Islamic economics is inherently value-driven, aiming to establish social justice and collective welfare through divine parameters such as the prohibition of interest (*riba*) and excessive uncertainty (*gharar*) (Kalkavan et al., 2021; Sudrajat, 2023). A significant research gap exists: current literature fails to provide a systematic model that translates empirical neurobiological discoveries—such as brain activity during risk mitigation or altruistic rewards—into actionable frameworks for Islamic economic decision-making.

To address this scientific and religious division, the objective of this study is to map the global evolution of neuroeconomic research trends and critically integrate its empirical insights within the objectives of the Islamic Law paradigm. By employing a robust mixed-methods approach integrating bibliometric mapping, automated

sentiment analysis, and qualitative conceptual modeling, this paper uncovers how modern neural substrates fit or contradict the natural predisposition of Islamic financial principles. Ultimately, this framework advances a multi-dimensional approach to policy design, personal finance, and social welfare within Muslim societies.

This paper tries to fill the gap between scientific and religious perspectives and critically analyzes how neuroeconomic insights meet Islamic economic values. It combines frontline neuroscience with an ethical system several centuries old. Thus, new insights into human behavior, social justice, and ethical economics emerge from this connection. The integration holds the potential for policy relevance, public understanding, and a more ethical and scientifically based approach toward economic activity in diverse societies.

LITERATURE REVIEW

Within the last few years, the interdisciplinary area of neuroeconomics has grown very fast, adding new insights into human behavior by combining economics, neuroscience, and psychology (Fumagalli, 2016). Such a methodological approach has disclosed how different mechanisms of the brain and neural processes contribute to economic decisions, such as risk-taking, ethical behavior, and social preferences. Basic neuroeconomic research has identified regions in the brain, such as the prefrontal cortex and amygdala, which are crucially involved in shaping choices that individuals make under uncertainty, their response to incentives, and their moral judgments. Indeed, researchers have proven that economic decisions are very often the result of an integration between cognitive processes, emotional states, and social influences, a precept that cuts into the core of traditional economic theories based upon purely rational actors (Camerer et al., 2004; Jezzini & Padoa-Schioppa, 2020; Stanger et al., 2013).

The concept of bounded rationality (central to neuroeconomics) from Webb (2021) states that human decision-making is noticeably limited due to deficits in information, cognitive biases, and emotional influences. This perspective has great implications for ethical behavior because the actions of individuals are very much based on emotions and neural reward systems. There have indeed been neuroimaging studies using functional MRI that support the idea that acts of charity activate the brain's reward centers; hence, a neurobiological origin of prosociality exists (Pelletier & Fellows, 2021; Stacher Hörndli et al., 2019). These findings align with Islamic economic principles underlining economic activities' moral and ethical dimensions, including an emphasis on zakat and *sadaqah*, about the redistribution of wealth and social welfare (Guritno et al., 2023; Yusuf et al., 2025).

The Islamic economics literature underlines a system founded upon an ethical foundation, with its rules and principles derived from the Quran and Hadith (Kanbir & Dikkaya, 2021). In contrast to conventional economics, where the utmost objective is the maximization of profit and individual utility maximization (Nordin et al., 2022),

Islamic economics emphasizes the judicious balance between material rewards and ethical concerns with social justice. The Islamic development theory, as Chapra (2000) envisioned, is thus supported, as well as the prohibition of *riba*, the risk-sharing principle, and ethical conduct that underline trade and commerce are manifestations of Islam's commitment to justice, equity, and social welfare. Many scholars have asserted that these elements provide the moral foundation for economic behavior, where individuals and institutions would foster collective welfare rather than individual gain only.

The other underlying theme of neuroeconomics and Islamic economics is ethics in economic decision-making. Many neuroeconomic studies have shown that brain activity associated with ethical and moral decision-making is based on social norms, incentives, and cognitive biases (Festré, 2010). Economic activities are coupled with ethics in Islamic economics: trade and finance lie under the ambit of ethical dictations like *amanah* or trustworthiness and *adl* or justice; societal interaction, on the other hand, falls under all these ethical master guidelines (Rahmatia, 2019). Focusing on neural mechanisms that govern ethical behavior offers a clear view of how neuroeconomic findings support or raise challenges to these Islamic economic principles.

This integration suggests that neuroeconomics will be linked to Islamic economic principles to suggest policies and practices that ensure ethical and socially responsible behavior. For example, knowledge of neural responses to incentives and social norms can be used to design policies based on Islamic values and help establish an economic practice that values collective welfare and justice. This also presumes the basic questions of how cultural and religious values shape neural processes and economic behavior, a rich avenue for future research to bridge the gap between science and religion.

RESEARCH METHOD

The methodology of this study utilizes an integrated mixed-methods research design. The quantitative phase utilizes bibliometric mapping and automated sentiment analysis, while the qualitative phase relies on thematic coding and deductive conceptual modeling.

The bibliometric analysis was executed in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines formalized by Moher et al. (2009). This study was conducted using a systematic approach to identify, screen, and include relevant scientific documents from the Scopus database over a period spanning from 2004 to 2024, in which this study uses VOSviewer software, following the analytical protocols established by Donthu et al. (2021) for co-word and thematic cluster analysis. The initial identification and screening phase yielded a total of 1,284 scientific documents, which were subjected to inclusion criteria to determine their relevance to the research objectives. Following this step, documents were evaluated for eligibility based on specific parameters such

as document type and language. Non-qualifying document types, including book chapters, books, conference papers, reviews, editorials, notes, and short surveys, along with miscellaneous others, were excluded from the analysis. Additionally, documents published in languages other than English, such as French, Spanish, Russian, and other languages, were omitted to ensure consistency in the analysis. The final dataset comprised 718 documents, which were included for bibliometric analysis to explore relevant trends and insights within the selected time frame. This process enabled a comprehensive examination of the existing literature and facilitated a robust understanding of the field's development and patterns.

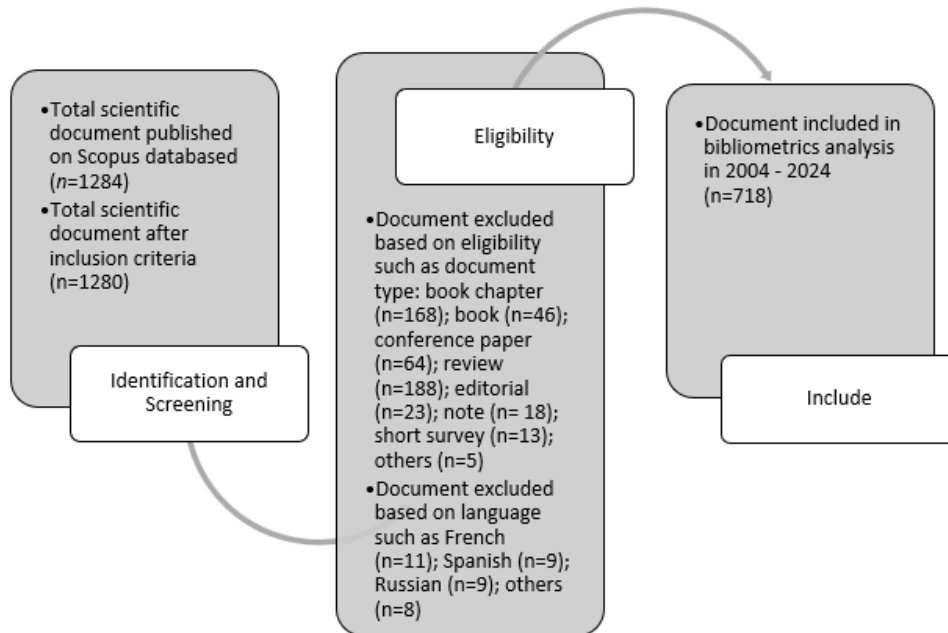


Figure 1. Prisma Flowchart for Bibliometric Analysis

Source: Developed by the author (2024)

The sentiment analysis was conducted on the same dataset of research articles included in the bibliometric analysis, comprising 718 documents sourced from the Scopus database from 2004 to 2024. This analysis uses NVivo 12 software, which is aimed at gauging the overall sentiment and thematic orientation within the collected body of literature. The sentiment analysis process began by extracting relevant textual data from abstracts, keywords, and titles of the selected documents. Natural Language Processing (NLP) tools and sentiment analysis algorithms were employed to categorize sentiments expressed in the texts as positive, negative, or neutral. Pre-processing steps were undertaken to ensure data quality, including text cleaning, tokenization, stemming, and the removal of stop words. Additionally, context-based analysis was performed using lexicons tailored to academic and scientific language, supplemented by manual validation to enhance accuracy and interpretive depth. The results of the sentiment analysis provided insights into prevailing attitudes, thematic priorities, and trends within the field of neuroeconomics. By capturing shifts in sentiment across time, the analysis facilitated an understanding of how research trajectories and scholarly discourse evolved,

thereby revealing potential connections and tensions between neuroeconomic findings.

The qualitative analysis was designed to bridge the insights obtained from the neuroeconomics literature with principles and practices inherent in Islamic economics. This analysis was based on thematic exploration and involved a comprehensive review of Islamic economic literature, ethical guidelines, and foundational principles derived from the Quran and Hadith. Following the sentiment and bibliometric analyses, key themes and patterns identified were assessed to examine their alignment, divergence, or complementary relationship with Islamic economic concepts such as justice, ethical trade, risk-sharing, and prohibition of interest (*riba*). Qualitative coding was conducted using a thematic analysis approach, with the aid of qualitative data analysis software to categorize and interpret data. The process involved open coding to identify recurring themes within the neuroeconomic literature, followed by axial coding to establish links between these themes and core Islamic economic principles. Relevant findings were further scrutinized through the lens of ethical and moral considerations emphasized in Islamic finance and economics, such as equity, social justice, and risk management. This integration of neuroeconomic insights with Islamic principles aimed to reveal areas where modern behavioral and neural findings may reinforce or challenge traditional Islamic economic frameworks, offering a nuanced perspective that fosters dialogue between science and religiously guided economics. This qualitative linkage serves to enhance the understanding of how neuroeconomic principles can inform and potentially enrich Islamic economic policies and practices, offering new pathways for ethical decision-making and social welfare.

RESULTS AND DISCUSSION

Figure 2 represents the development in research activity in Neuroeconomics, as measured by the number of published research articles annually between 2004 and 2024. It is an active way to show the development within a field of study that merges neuroscience, psychology, and economics to examine human decision-making behavior. Between 2004 and 2008, Neuroeconomics was in its infancy. The number of publications was low, which makes sense considering the field's fledgling status. This growth would probably be slow and parallel foundational efforts to establish the discipline, with researchers mostly exploring its potential and starting to integrate methodologies from the contributing fields.

A tremendous shift occurred between 2009 and 2011, when the number of publications increased rapidly, peaking around 2010. This represented the pinnacle of scholarly interest in Neuroeconomics, recognizing that the domain has become dynamic and genuinely innovative. This might be partly due to significant discoveries, such as the introduction of state-of-the-art neuroimaging techniques in economic research and increased funding and institutional support during that time. The interest in investigating how brain mechanisms may contribute to economic behavior

has become quite acute, leading to an upsurge of studies and debates. After the peak, from 2012 to 2016, the field was in a phase of stabilization and gradual decline. While the number of publications was still significant, it still needs improvement compared to the years of peak publication. The described pattern indicates the transformation of enthusiastic exploration into the maturity of research when the focus and productivity stabilize. It is also conceivable that researchers started to encounter practical and methodological limitations in integrating neuroscience findings into economic models, which would put the brakes on momentum.

From 2017 to 2022, the decline became more pronounced; however, publication activity remained consistent, with slight fluctuations. The scientific world was turning its attention to other fields, such as new and rapidly developing ones like artificial intelligence and machine learning, which also study human behavior and decision-making. Another explanation could be that neuroeconomics needs help to prove its extensive applicability or cannot sustain the same level of interdisciplinarity. The steep drop in 2023 and 2024 is quite remarkable. This may be due to incomplete entries for the latter years, particularly for 2024, considering the current year is open. This decline could also represent a general demise of the field's importance due to decreasing funding or a shift in academic and industry focus to other new areas of study. The aftereffects of COVID-19, which almost brought academic publishing and research to a grinding halt for most fields, also certainly had an effect.

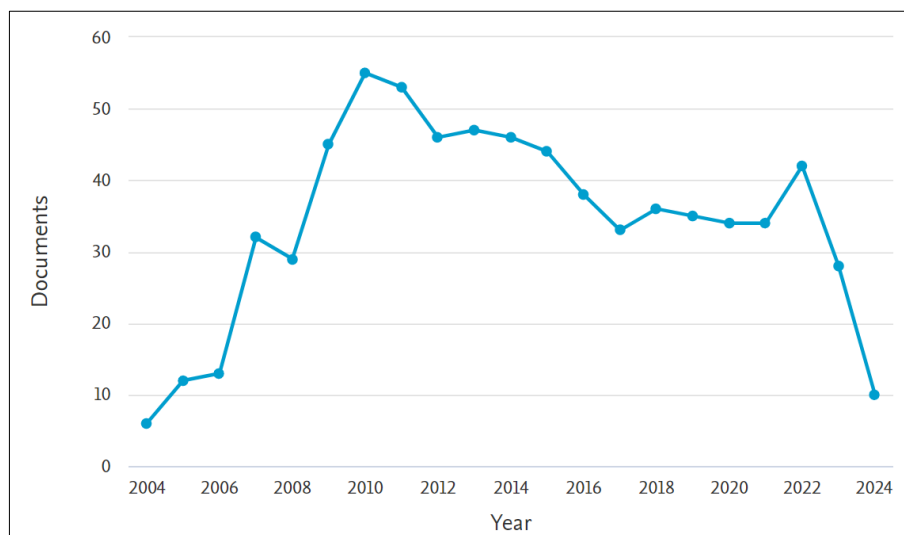


Figure 2. Number of Publications

Source: Developed by the author (2024)

This decline notwithstanding, the story of Neuroeconomics is far from over. The field has laid into the memory a corpus of valuable insights about how the brain shapes economic behavior; its future may be inscribed on its ability to evolve and integrate into nascent technologies. Neuroeconomics can stay at the forefront in unraveling the mysteries of human decision-making in a more challenging world if it addresses current challenges and forges new collaborations. Figure 2, then, stands as

a record of past activity and a reminder of the potential for renewal and transformation in scientific inquiry.

Figure 3 provides a fascinating snapshot of the global research landscape in Neuroeconomics, focusing on the top 10 countries/territories based on their research output. However, the leading contributor is the United States, whose towering bar length signifies a significant contribution to the field. Such dominance has been possible because of various factors, including substantial research funding, a strong scientific infrastructure, and a large pool of talented researchers.

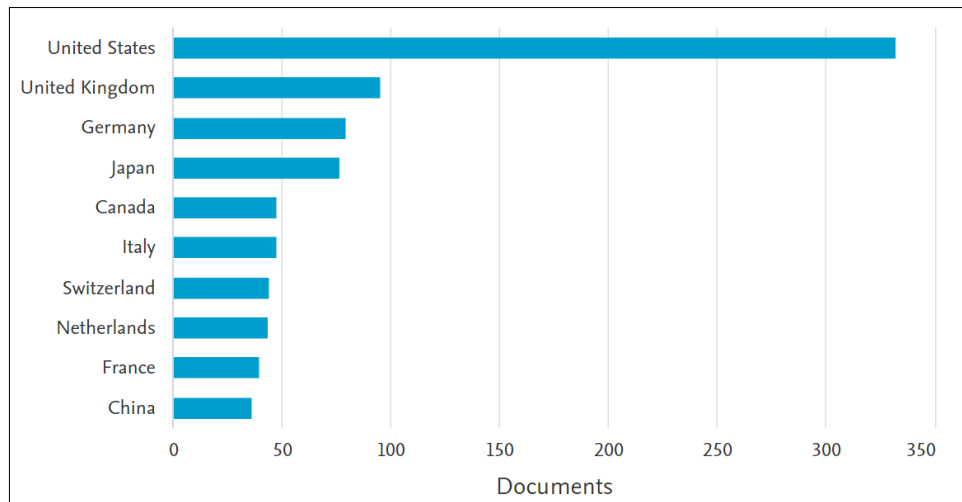


Figure 3. Documents by Country or Territory

Source: Developed by the author (2024)

After the United States, the following countries are the United Kingdom and Germany, with their powerful research traditions in neuroscience and economics. Both of these countries have invested heavily in interdisciplinary research, allowing neuroscientists, economists, and psychologists to collaborate. Japan, Canada, and Italy form the middle tier of the graph, reflecting an excellent commitment to Neuroeconomics research. These countries have actively favored interdisciplinary research and are growing interested in understanding the neural basis of economic decision-making. Countries like Switzerland, the Netherlands, France, and China are on the lower end. However, even though their research output could be more extensive than that of the top performer, their presence on the graph underlines that these nations are involved in Neuroeconomics research.

Figure 3 stands out because it gives a powerful visual presentation of the entire global research landscape in Neuroeconomics. It points out the leading countries in the field, identifies potential areas for international collaboration, and underlines the growth of worldwide interest in finding out how neural substrates constitute economic decisions.

The “Neuroeconomics Sentiment Results” from graph 3 offer an exciting look at the emotional landscape in neuroeconomics. It reflects a fascinating story about how sentiments, be they positive or negative, can live together in harmony. The most salient feature of this graph is the dominance of the “Moderately Negative” category.

Thus, in fact, a sizeable proportion of the research community has a skeptical or reserved attitude toward the field. Many factors may account for these results: the intrinsically complex nature of the research on the neural basis of economic decision-making, current methodological limitations, or the perceived lack of practical applications.

However, it also reflects a disproportionately higher proportion of “Moderately Positive” sentiment. Many researchers were optimistic about the capability of Neuroeconomics to bring about a sea change in the understanding of human behavior and decision-making processes. Perhaps this optimism is supported by reasons such as the field’s interdisciplinarity, the possibility of innovative applications, or even the thrill of a discussion on the neural underpinnings of economic choices. The relatively small representation of “Very Negative” and “Very Positive” sentiments suggests that extreme opinions are less common in the field. This may be because Neuroeconomics is still a relatively young discipline, and researchers are still fighting with its potential and limitations.

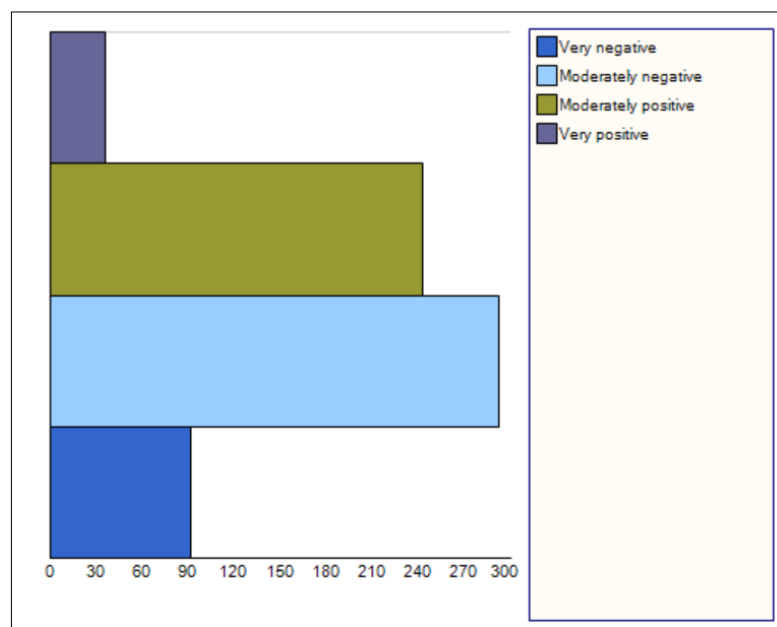


Figure 4. Neuroeconomics Sentiment Results

Source: Developed by the author (2024)

Overall, that suggests a promising yet challenging field. There is enthusiasm and optimism, yet a degree of caution and skepticism in equal measure. The future of Neuroeconomics will depend on how the field addresses these mixed sentiments, overcomes its current challenges, and capitalizes on its potential to provide valuable insights into human behavior and decision-making.

This word cloud on Neuroeconomics gives a visual of some of the concepts and themes in this interdisciplinary area of science. The size and prominence are indicative of the frequency and importance of the word in the literature. In the center of the word cloud is the word "Neuroeconomics", making it the central word. A

number of terms connect to it; these connecting words reflect several different topics within the field.



Figure 5. Word Cloud on Neuroeconomics

Source: Developed by the author (2024)

The word "decision" is the most relevant here; it underlines the main interest of Neuroeconomics: how the brain makes choices. This again is evidenced by other terms, such as "behavior", "risk", and "choice", emphasizing the behavioral and cognitive facets of decision-making. Another striking catchphrase is the word "brain", which further indicates that economic behavior is supported by the neural aspect. This fact is further implicated by some key words such as "imaging", "neurons", and "cortex", suggesting the use of neuroimaging techniques in decision-making. As is indicated by the word "human" in Neuroeconomics, it also focuses on human behavior. In fact, this is further qualified by other terms such as "social", "adult", and "male" that indicate social and demographic aspects that can influence economic decisions. Terms like "experiment", "model", and "theory" point to the fact that neuroeconomics is a field that relies heavily on empirical methods and uses very sophisticated scientific methodologies for the testing of hypotheses and the building of theories. This word cloud provides a good overview of most of the central concepts and themes associated with Neuroeconomics. The Neuroeconomics discipline, being an interdisciplinary one, needs to know not only the neurological basis of economic decision-making but also the social, cultural, and cognitive biases of such decisions.

The VOSviewer visualization from Figure 6 offers a mesmerizing insight into the complex web that constitutes Neuroeconomics. This dynamic network of keywords, color-coded into distinct clusters, depicts the many facets of this interdisciplinary field. Here, the central node, "Neuroeconomics" itself, lies at the heart of this intellectual landscape. The constellation of related themes surrounding this core concept begins to take shape. For instance, a blue cluster deals with the neural underpinnings of economic behavior, which examines the brain, neurons, and brain function. It is as if we peek into the very machinery of the mind and see the neural processes attendant upon our economic choices.

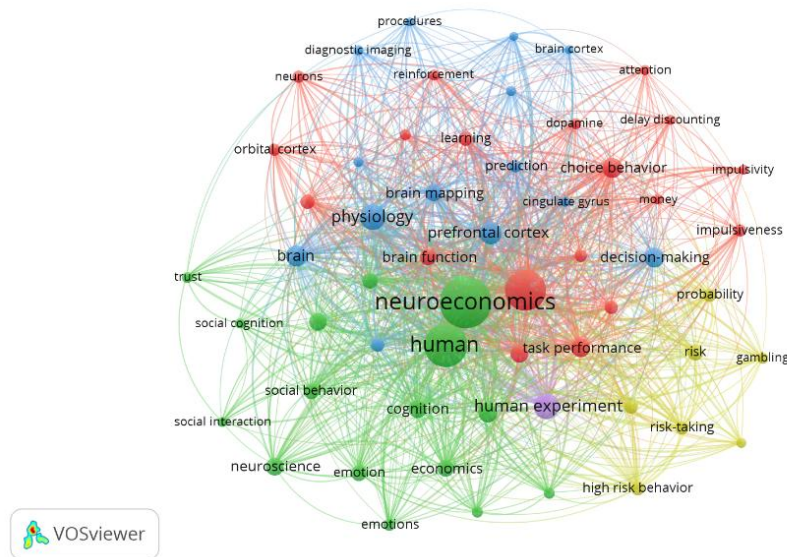


Figure 6. Thematic Network and Map Analysis

Source: Developed by the author (2024)

The red cluster takes the reader on a journey into decision-making and behavior. Keywords like “decision-making,” “risk,” and “reward” paint a vivid picture in our minds as to the cognitive processes that occur in economic choice. It is like exploring the labyrinth of the mind as it meanders its way through complex decisions, weighing the potential reward-risk outcomes. By contrast, the green cluster points to social and emotional aspects of economic behavior: “social cognition,” “emotion,” and “trust”—the mind interacting with the social environment. This is like the acquaintance with more subtle social forces guiding our choices.

Color-coding within VOSviewer permits a beautiful yet instructive view of the neuroeconomics landscape. It helps to see the big picture, identify emerging trends, and uncover hidden connections between different research areas. This visualization enhances the understanding of neuroeconomics and inspires further explorations and interdisciplinary collaborations. This study links the neuroeconomics with Islamic economics principles.

Neuroeconomics studies neural correlates of decision-making processes. This entirely agrees with the Islamic approach to *tafakkur* (profound reflection), which encourages individuals to engage their minds and reflect upon things around them (Ahmad A'toa' & Mardiana, 2021). The knowledge of the underlying brain mechanisms responsible for risk perception, reward sensitivity, and social preferences might explain how people make decisions in the face of uncertainty or risk. This, therefore, means that such an understanding would play a significant role in the development of efficient risk management frameworks in Islamic finance, allowing it to make all financial decisions with due care and in anticipation of consequences: *“And consult them in the affair. Then, when you have decided, put your trust in Allah. Indeed, Allah loves those who trust”* (Ali Imran:159). Islamic economics has various critical moral principles, such as social justice, equity, and

mercy, as in the Quran (An-Nahl: 90), *"Indeed, Allah commands you to uphold justice (al-adl) and to do good (al-ihsan), and to give to relatives, and forbids immorality, bad conduct, and oppression. He admonishes you that perhaps you will be reminded,"* and in hadiths (Tirmidhi, Hadith 1924), *"The Prophet Muhammad (peace be upon him) said: The merciful are shown mercy by the Most Merciful. Be merciful on the earth, and you will be shown mercy from above. Uphold the ties of kinship, and Allah will uphold His connection with you."* Investigation into the neurobiological mechanism of social conduct, altruism, or empathy provides a deeper understanding of the motivational basis involved in driving individuals to act in a manner that can increase other people's well-being. This might guide the formulation and execution of policies and practices relating to social cohesion and economic progress as manifestations of Islamic principles, such as *ta'awun* (cooperation) (Rizki et al., 2022; Sarif, 2015).

Another neuroeconomic approach to halal and haram in Islamic economics is based on the idea that understanding the neural mechanisms driving moral judgment and decision-making may yield insight into the factors that could affect ethical decision-making and help devise means of promoting ethics in economic activities. This goes a long way in ensuring that economic activities align with Islamic principles of justice, truthfulness, and transparency (Nur, 2024).

In a nutshell, integrating insights from Neuroeconomics and Islamic Economics provides profound insight into human behavior and decision-making processes. By achieving such a synthesis, unique solutions can be obtained to economic and social problems, namely the development of ethical financial products, advancing sustainable development, and encouraging social justice. Ultimately, such integration would result in a more just, equitable, and prosperous society.

Figure 5 is a proposed model by the authors that describes how integrating Neuroeconomics and Islamic economic principles brings into view a promising interdisciplinary approach to understanding and enhancing economic behavior. This integrative approach emphasizes several vital aspects. Firstly, it explores the neural correlates of Islamic economic values, such as empathy and altruism, by studying the brain mechanisms related to compassion and prosocial behavior, which are integral to the Islamic principles of social justice and human brotherhood. Similarly, the neural mechanisms underlying equity and justice are researched to match Islam's emphasis on fairness and prohibition against exploitation. Understanding the neural connections between risk aversion and risk-taking has particular relevance for Islamic financial instruments, which emphasize risk-sharing mechanisms. The neural mechanisms of trust and cooperation also form a basis necessary for social capital and community building in transactions that surround Islamic economics.

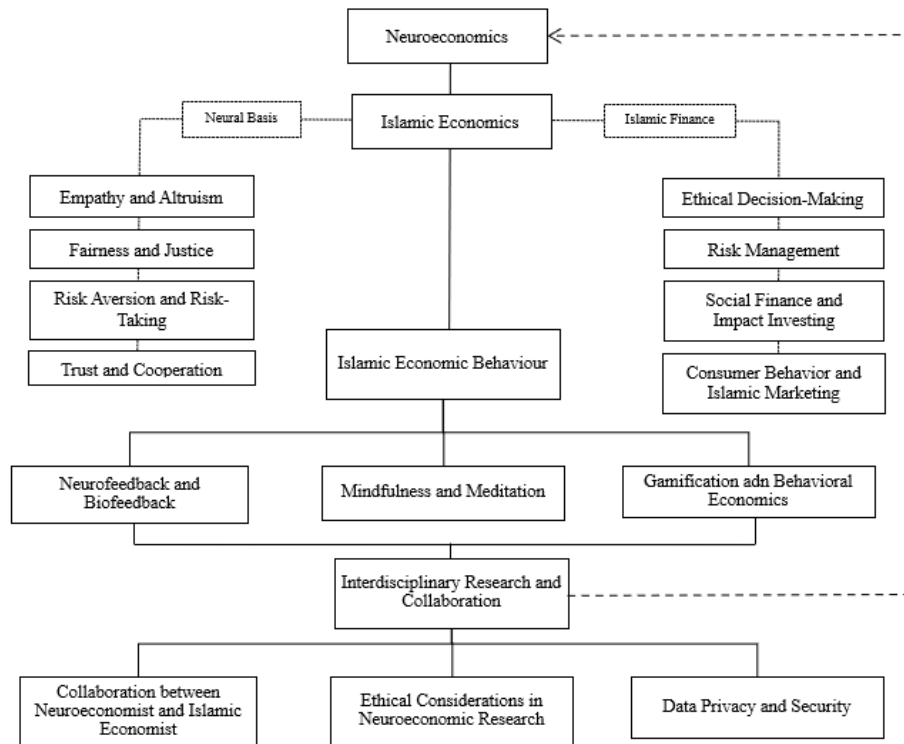


Figure 7. A Proposed Model in Linking Neuroeconomics with Islamic Economics

Source: The author's own proposed (2024)

The framework further integrates neuroeconomic perspectives into Islamic finance by analyzing ethical decision-making mechanisms that ensure commitments to Shariah principles are upheld. Neuroeconomics techniques may have substantial methods for managing risk compatible with Islamic notions of prudence and caution. The neurological underpinnings of social preferences and philanthropic behaviors yield practical insights for formulating socially responsible investment strategies and augmenting the effectiveness of social finance.

Furthermore, researching consumer behavior and neural mechanisms in Islamic markets can help develop efficient and culturally congruent marketing strategies. Another highly relevant dimension of such integration is the neuroeconomic intervention for Islamic economic behavior. Neurofeedback and biofeedback facilitate better emotion regulation and enhance ethical decision-making, hence responsible behavior according to Islamic ethics. Practices like mindfulness and meditation, which entail neurocognitive benefits, can enhance self-awareness and spiritual development while concurrently reducing stress, thus closely resonating with Islamic values. Gamification and behavioral economics also introduce new tools for engaging people in ethical practices and financial literacy training in a way that is both fun and engaging. In order to make this interdisciplinary effort successful, collaboration between neuroeconomists and Islamic economists is highly needed. Such collaborations result in novel research findings and knowledge to be shared. Ethical issues regarding neuroeconomic research, especially religious values and beliefs, must be addressed strictly. Data protection regarding privacy and

security is also essential, especially when applying neuroimaging. Such an integrated framework will deepen the understanding of the cognitive and neural mechanisms forming the basis for economic behavior. This should lead to novel solutions to contemporary economic and social problems, ethical decision-making, and sustainable development in conformity with the foundational values of Islam.

The thematic network analysis generated by VOSviewer and the automated sentiment lexicons from NVivo 12 highlight critical dimensions where empirical neurobiology intersects with the Islamic Economic Decision-Making Model. While conventional neuroeconomics demonstrates that human rationality is bounded by emotional states, cognitive loads, and neural constraints (Webb, et al., 2021) it provides a concrete biological foundation for how decision-making is structured in an Islamic framework.

In the conventional paradigm, economic decision-making is often modeled around the concept of a strictly selfish "*homo economicus*". However, the neuroeconomic literature analyzed in this study reveals that prosocial behavior and altruism are deeply hardwired into the human brain. Neuroimaging studies show that cooperative choices and charitable acts activate the ventral striatum and the mesolimbic dopamine pathway—the brain's natural reward system (Pelletier & Fellows, 2021). Within the Islamic economic decision-making model, this empirical finding validates the concept of "*homo islamicus*", where utility maximization is not merely material or individualistic but inherently includes spiritual rewards and collective welfare (*ta'awun*).

Furthermore, the data regarding risk and uncertainty mapping reveal how neural substrates, particularly the amygdala and prefrontal cortex, process ambiguity and speculative stress (Sepúlveda et al., 2017). When individuals engage in highly volatile, speculative, or deceptive situations—conceptually equivalent to *gharar* in Islamic finance—the brain experiences heightened cognitive anxiety, leading to suboptimal and irrational economic choices. Therefore, the restriction against *gharar* in Islamic decision-making serves as a protective mechanism that aligns with human neurobiological limitations. By integrating these neuroeconomic clusters, our proposed model framework (Figure 7) illustrates that Islamic economic decision-making is driven by a balanced interaction between cognitive control (*'aql*) and moral-spiritual consciousness, effectively shifting the decision-making paradigm from pure self-interest to an equilibrium of individual and social utility.

CONCLUSION

This study successfully fulfills its primary objective of mapping the global evolution of neuroeconomics over the past two decades (2004–2024) and integrating its core findings into a structured Islamic Economic Decision-Making Model. By utilizing a mixed-methods approach, this paper addresses a critical research gap regarding how neurobiological constraints and cognitive mechanisms correspond with Islamic financial ethics. The empirical findings from the bibliometric and

sentiment analysis of 718 Scopus-indexed documents reveal two major insights. First, neuroeconomic research exhibits a fluctuating publication trend that peaked in 2010, dominated by global collaborative networks focused on cognitive control, risk assessment, and behavioral choices. Second, the automated sentiment analysis uncovers a narrative of cautious skepticism among scholars concerning methodological boundaries, yet highlights a growing consensus that human rationality is inherently bounded. When these insights are integrated into the Islamic economic decision-making framework, the data prove that human biology is not hardwired for the strictly selfish behavior of "*homo economicus*". Instead, neuroimaging studies showing that cooperative and altruistic choices activate the brain's natural reward system (the ventral striatum) provide an empirical validation for the "*homo islamicus*" model, where economic utility is maximized through social cooperation (*ta'awun*) and equity. Furthermore, neuroscience demonstrates that extreme speculative stress, which is conceptually equivalent to *gharar*, triggers cognitive anxiety and optimal brain shutdown, thereby providing a biological justification for the Shariah restrictions on excessive risk.

Given the qualitative nature of this integration, these findings offer profound policy relevance. Integrating neuroeconomics with Islamic economic principles offers a promising pathway toward fostering ethics and social responsibility in economic activities and closely aligns with Islamic values such as justice and collective welfare. This calls for policymakers and financial practitioners to consider equity, social justice, and risk management in framing economic policy toward the assurance of sustained and inclusive growth.

However, a limitation of this study is that it relies on a conceptual and qualitative synthesis of existing literature. To validate the proposed framework, future research must move beyond literature mapping toward empirical and experimental studies. Future researchers are urged to conduct clinical experiments (such as fMRI or EEG tracking) on Muslim consumer cohorts to explore how deep-seated religious values and moral imperatives actively shape neural processes and economic behavior, finally solidifying the empirical link between frontline neuroscience and Islamic economic decision-making.

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