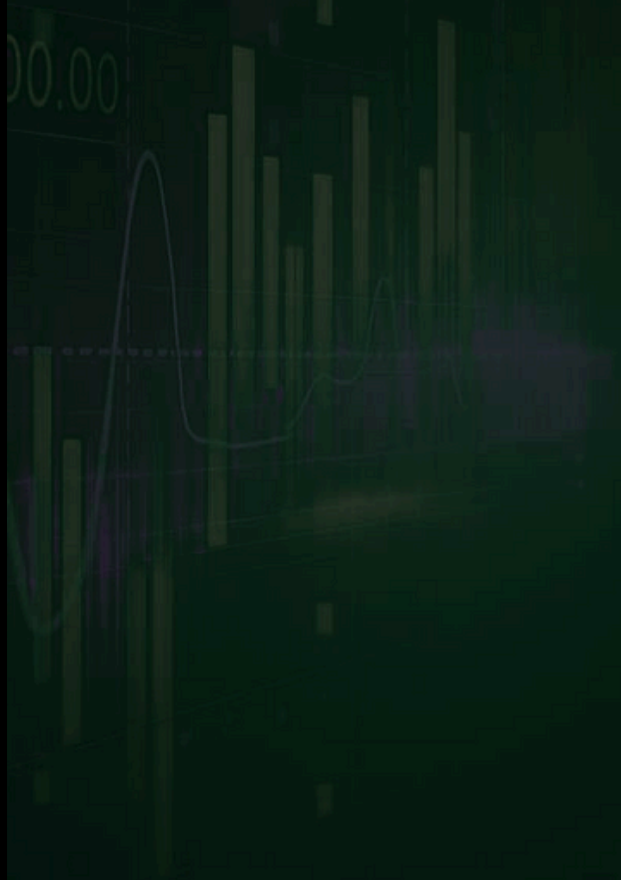
ASES
JOURNAL OF ECONOMY



YEAR 2025
VOLUME 3
ISSUE 2

EDITED BY

PROF. DR. FİLİZ KUTLUAY TUTAR

ISSN:3023-5634

ASES
JOURNAL OF ECONOMY

ISSN: 3023-5634

ASES INTERNATIONAL JOURNAL OF ECONOMY (3023-5634)

ASES
JOURNAL OF ECONOMY
ISSN: 3023-5634

HAKEM LİSTESİ/ LIST OF REVIEWERS

Prof. Dr. AHMET NİYAZİ ÖZKER

Bandırma Onyedi Eylül Üniversitesi (Türkiye)

Prof. Dr. ARZU KARACA

Munzur Üniversitesi (Türkiye)

Prof. Dr. BANU YAZGAN İNANÇ

Toros Üniversitesi (Türkiye)

Prof. Dr. IOSEFINA BLAZSANI BATTO

Azerbaijan University Of Languages (Azerbaycan)

Prof. Dr. İBRAHİM HALİL SUGÖZÜ

Kyrgyz-Turkish Manas University (Kyrgyzstan)

Prof. Dr. LEVENT GÖKDEMİR

Inönü Üniversitesi (Türkiye)

International Balkan University (Makedonya)

Prof. Dr. M. HANİFİ ASLAN

Hasan Kalyoncu Üniversitesi (Türkiye)

Assoc. Prof. BAMBANG HADI SANTOSO

Sekolah Tinggi Ilmu Ekonomi Indonesia Surabaya (Endonezya)

Assoc. Prof. DERYA ATLAY IŞIK

Muğla Sitki Koçman Üniversitesi (Türkiye)

Assoc. Prof. EHSAN RASOULINEZHAD

University Of Tehran (Iran)

ISSN: 3023-5634

İNDEKSLER/ INDEXING

Index Copernicus

OpenAIRE

Google Scholar

Road

ASES
JOURNAL OF ECONOMY
ISSN: 3023-5634

Eurasian Scientific Journal Index

Sudoc

WorldCat

ResearchBib

EuroPub

BASE (Bielefeld Academic Search Engine)

YAYIN LİNKİ/ PUBLICATION LINK: www.intecojournal.com

ASES
JOURNAL OF ECONOMY
ISSN: 3023-5634

CONTENTS / İÇİNDEKİLER

ISSN
3023-5634

Article Arrival Date
07.07.2025

Article Published Date
20.12.2025

Unveiling the Investor Mindset: A Systematic Review of Qualitative Evidence in ESG-Driven and Tech-Enabled Real Estate

Muhammad Taufiq ABADI[1], Indrianawati USMAN[2], Zunairoh[3]

[1] Department of Management Science, Faculty of Economics and Business,Universitas Airlangga, Surabaya, Indonesia,

[2] Department of Management Science, Faculty of Economics and Business,Universitas Airlangga, Surabaya, Indonesia

[3]Faculty of Business and Economics, Univerisity of Surabaya, Surabaya, Indonesia

Abstract

Purpose – This study aims to systematically synthesize qualitative insights into how investors perceive risk, construct value, and make investment decisions in sustainable and technology-enabled property markets. It responds to the growing need to understand investor behavior at the intersection of ESG imperatives and digital innovation.

Design/methodology/approach – A systematic literature review (SLR) was conducted following the PRISMA protocol and PICOS framework, focusing exclusively on qualitative studies published between 2018 and 2025. Eighty-six peer-reviewed open-access articles were analyzed using thematic synthesis and bibliometric mapping through VOSviewer.

Findings – The review reveals three dominant narratives: (1) a recalibration of investor risk perception in light of ESG integration and climate pressures, (2) an evolving construction of investment value shaped by green certifications and PropTech tools such as blockchain and AI, and (3) decision-making processes influenced by cognitive heuristics, digital literacy, and socio-cultural context. Keyword co-occurrence and citation analyses further highlight the field's interdisciplinary nature - connecting behavioral finance, real estate, technology, and sustainability.

Practical implications – The findings offer actionable insights for developers, fund managers, policymakers, and PropTech providers. Embedding ESG transparency and innovative functionalities into property products can enhance investor confidence. Regulatory bodies can improve investment outcomes by aligning disclosure standards with investor perception dynamics.

Originality/value – This is the first SLR to map qualitative research on investor behavior in the context of sustainable and digitally transformed real estate. It contributes a novel conceptual framework, identifies research gaps, and proposes future directions for integrating behavioral, technological, and sustainability perspectives into property investment strategies.

Keywords: Sustainable property; PropTech; investor behavior; ESG; real estate innovation

Subject classification codes: include these here if the journal requires them

ISSN
3023-5634

Introduction

The real estate investment landscape is transforming significantly, driven by sustainability imperatives and technological advancements. Investors increasingly consider environmental, social, and governance (ESG) factors alongside traditional financial metrics when making investment decisions. Simultaneously, integrating technologies such as PropTech, blockchain, and artificial intelligence is reshaping how properties are developed, managed, and transacted (Shunmugasundaram & Sinha, 2024).

This convergence of sustainability and technology presents both opportunities and challenges for investors. On the one hand, sustainable and tech-enabled properties offer the potential for enhanced returns, operational efficiencies, and alignment with societal values. On the other hand, the complexity and novelty of these investments introduce new dimensions of risk and uncertainty, necessitating a deeper understanding of investor behavior in this evolving context (Richards et al., 2025).

Despite the growing prominence of sustainable and tech-enabled real estate, there remains a paucity of research exploring how investors perceive and navigate these markets. Traditional investment theories often assume rational decision-making, yet behavioral finance literature suggests that cognitive biases and heuristics significantly influence investor behavior (Shunmugasundaram & Sinha, 2024). In the context of sustainable and technologically advanced properties, these behavioral factors may play an even more pronounced role, given the relative novelty and complexity of such investments.

Moreover, existing studies focus on quantitative analyses, leaving a gap in qualitative insights that capture investors' nuanced perceptions, motivations, and decision-making processes in these markets. Understanding these qualitative dimensions is crucial for stakeholders aiming to promote sustainable investment practices and develop technologies that align with investor needs and expectations (Richards et al., 2025).

This systematic literature review (SLR) aims to synthesize qualitative research on investor behavior in sustainable and tech-enabled property markets. By consolidating qualitative insights, this SLR contributes a more comprehensive understanding of investor behavior in emerging real estate markets characterized by sustainability and technological innovation. The findings can inform policymakers, developers, and technology providers seeking to foster investment in sustainable and tech-enabled properties. Additionally, the study identifies areas for future research, highlighting the need for interdisciplinary approaches that integrate behavioral finance, sustainability studies, and technology management.

Problem Statement

Despite the growing prominence of sustainable and tech-enabled real estate, there remains a paucity of research exploring how investors perceive and navigate these markets. Traditional investment theories often assume rational decision-making; however, behavioral finance literature suggests that cognitive biases and heuristics significantly influence investor behavior (Shunmugasundaram & Sinha, 2024). In the context of sustainable and technologically advanced properties, these behavioral factors may play an even more pronounced role, given the relative novelty and complexity of such investments.

Moreover, existing studies focus on quantitative analyses, leaving a gap in qualitative insights that capture investors' nuanced perceptions, motivations, and decision-making processes in these markets. Understanding these qualitative dimensions is crucial for stakeholders aiming to promote sustainable investment practices and develop technologies that align with investor needs and expectations (Richards et al., 2025).

ISSN
3023-5634

Integrating technologies such as augmented reality (AR) and virtual reality (VR) into the real estate sector has introduced new variables influencing investment decisions. These technologies offer immersive experiences that can alter investor perceptions and engagement with properties, yet the psychological impact of such tools on decision-making remains underexplored (Deep et al., 2025).

Furthermore, the emergence of PropTech has reshaped traditional real estate operations, introducing digital platforms and data-driven decision-making processes. While these innovations promise efficiency and transparency, they also add layers of complexity that may affect investor confidence and behavior (Danivska, 2024).

Behavioral biases such as overconfidence, disposition effects, and confirmation biases have been identified as significant factors influencing investment decisions across various sectors, including real estate. These biases can lead to suboptimal investment choices, particularly in markets characterized by rapid technological advancements and evolving sustainability standards (Shunmugasundaram & Sinha, 2024).

The lack of comprehensive qualitative studies examining these behavioral aspects in the context of sustainable and tech-enabled real estate investments underscores the need for systematic reviews that synthesize existing knowledge and identify gaps for future research. Such reviews can provide valuable insights into investor psychology, aiding in developing strategies and tools that support informed and rational investment decisions in this dynamic sector.

Research Objectives

This systematic literature review (SLR) aims to synthesize qualitative research on investor behavior in sustainable and tech-enabled property markets. The specific objectives are:

To explore how investors construct value in the context of sustainable and technologically advanced properties.

To examine investor perceptions of risk associated with these investments.

Understand investors' decision-making processes when considering sustainable and tech-enabled real estate opportunities.

By consolidating qualitative insights, this systematic literature review offers a crucial lens through which investor behavior in the context of sustainable and technologically advanced property markets can be better understood. While the quantitative modeling of investment decisions has long dominated real estate research, qualitative studies provide a depth of understanding that captures not only what investors do but why they do it—illuminating motivations, perceptions, emotions, and behavioral patterns often overlooked in numerical analysis.

Significance of the Study

This review is particularly significant as it situates investor behavior within the rapidly evolving dual context of sustainability imperatives and digital disruption. In emerging property markets, sustainability is no longer a peripheral concern but a central investment criterion influenced by regulatory pressures and shifting societal values. At the same time, PropTech innovations such as intelligent building systems, blockchain-based transactions, and AI-driven property analytics are reshaping how investors interact with real estate assets. This study uncovers the cognitive and affective undercurrents that shape emerging investment paradigms by mapping how these forces interact within investors' minds and decision frameworks.

The findings are not merely academic in relevance—they offer practical implications for various stakeholders. Policymakers can better understand the psychological and informational

ISSN
3023-5634

barriers that may hinder sustainable investment uptake and thus design more targeted regulatory frameworks and incentives. Real estate developers and fund managers can gain insights into investor expectations and risk sensitivities, enabling them to tailor product offerings that align with financial and non-financial value criteria. Meanwhile, technology providers in the PropTech sector can use these insights to enhance their platforms' usability, trustworthiness, and value proposition in ways that resonate with investor behavior patterns.

Furthermore, this study also holds importance for the academic community by identifying conceptual and methodological gaps in the current body of literature. It underscores the necessity for interdisciplinary approaches that transcend traditional disciplinary silos. Behavioral finance alone cannot explain all facets of investor action; adoption models of sustainability science and technology must be based on a deeper understanding of human decision-making. This review, therefore, calls for integrated research frameworks that combine psychological theory, technological innovation studies, and sustainability performance metrics.

Finally, in highlighting the underrepresentation of qualitative perspectives in the current literature, this study advocates for a more balanced methodological pluralism in future real estate research. It encourages using grounded theory, narrative inquiry, ethnography, and other qualitative methodologies that can unravel the complex, lived realities of investors navigating uncertainty, disruption, and transformation in the property sector. The study contributes to theory development and enhances academic research's practical relevance and responsiveness to real-world challenges in sustainable real estate investment.

Literature Review

Investor behavior in sustainable and tech-enabled property markets has become a central focus of recent research. Deep et al. (2025) reveal that technologies such as Augmented Reality (AR) and Virtual Reality (VR) can enhance perceived value and investor confidence, ultimately influencing investment decisions. These tools allow investors to experience properties virtually, reducing uncertainty and increasing efficiency in decision-making processes. Devi et al. (2024) also identify that rational and irrational factors-such as cognitive biases, overconfidence, and anchoring—play significant roles in property investment decisions. Understanding these behavioral elements is crucial to designing more effective investment strategies responsive to market dynamics.

Risk perception and value construction by investors in the context of sustainable and tech-driven property are key aspects of understanding investment behavior. Tagliaro et al. (2024) emphasize that while technology integration in real estate can improve transparency and operational efficiency, it also introduces new challenges, such as data interoperability and the lack of industry standards. Investors must weigh benefits and risks when evaluating long-term value (Tagliaro et al., 2024). Moreover, Verrinder et al. (2018) find that impact-oriented investors prioritize certainty in their decision-making. This suggests that risk perception is not purely financial but also tied to personal values and broader investment objectives (Verrinder et al., 2018).

Technology adoption has significantly reshaped investor engagement with real estate assets and information. Tagliaro et al. (2024) identify PropTech as a key driver of data integration and evidence-based decision-making, although this evolution requires changes in business models and professional competencies. This shift demands a more profound understanding from investors about the role of technology in shaping long-term property value (Tagliaro et al., 2024). Furthermore, Deep et al. (2025) demonstrate that digital technology enhances investor engagement through virtual experiences, which can strongly influence value perception and investment behavior. These findings highlight the importance of exploring how technology alters investor interaction with property markets.

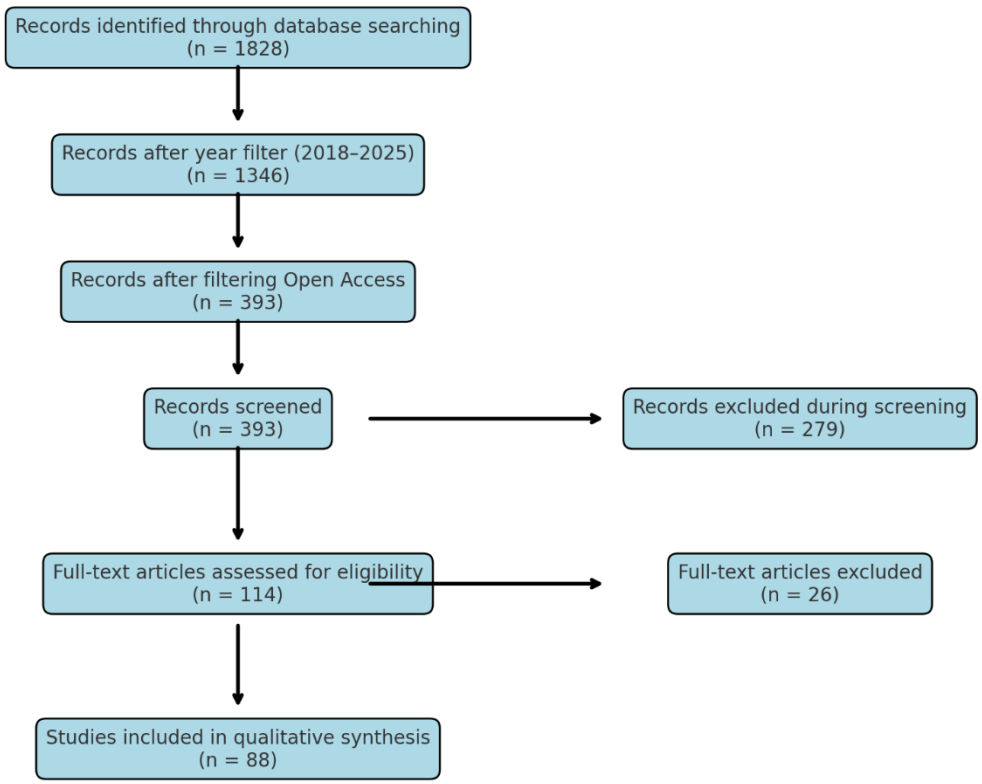
ISSN
3023-5634

Qualitative methods have been widely employed to explore the complexity of investor behavior in sustainable and tech-enabled real estate. Through in-depth interviews, Lee and Liu (2025) examine how homebuyers search for digital information and how this influences their buying decisions. Their findings underscore the significance of brand perception and search functionality in decision-making. Similarly, Devi et al. (2024) use qualitative techniques to investigate how psychological factors influence investment satisfaction and reinvestment intentions in residential property markets. Such approaches provide a richer understanding of investor motivations and preferences.

Methodology

This study adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework as the guiding protocol for conducting a transparent and replicable systematic literature review. The PRISMA approach facilitates structured identification, screening, eligibility assessment, and inclusion of relevant studies, ensuring the review process adheres to rigorous academic standards (Page et al., 2021). The flow of article selection is presented in the PRISMA diagram (see Figure 1), detailing each stage from initial identification to final synthesis.

Figure 1 Prisma Flow Diagram



Source: authors' own work

(1)Inclusion and Exclusion Criteria

The selection of studies was guided by predefined inclusion and exclusion criteria aligned with the PICOS framework, ensuring relevance to the research question:

Inclusion Criteria:

ISSN
3023-5634

Studies published between 2018 and 2025, Peer-reviewed journal articles, Open access availability, Qualitative research design (e.g., interviews, case studies, ethnography, grounded theory), Focus on investor behavior in sustainable and/or tech-enabled property markets, Studies addressing at least one element of ESG or technological intervention (e.g., PropTech)

Exclusion Criteria:

Non-English language publications, Quantitative-only studies without qualitative dimensions, Publications not related to real estate investment contexts, Editorials, opinion pieces, or book chapters without empirical data.

(2)Data Sources

To ensure comprehensive coverage of the literature, multiple reputable databases were used:

Scopus as the primary academic citation index for identifying high-impact peer-reviewed journals; supplementary searches were also performed on emeraldgrouppublishing.com using specific keywords such as "investor behavior," "PropTech," "sustainable property," and "qualitative." The initial search yielded 1,828 documents, which were filtered by publication year (2018–2025), resulting in 1,346 records. Only 393 open-access articles were retained for screening.

(3)Study Selection Process

The study selection followed a multi-stage filtering process:

Title and abstract screening was conducted to exclude irrelevant and non-empirical articles.

Full-text evaluation was then applied to 120 articles that met the initial screening criteria.

Final inclusion resulted in 86 studies, all providing qualitative insights into investor behavior in the context of sustainability, technology, or both within the property investment domain.

Duplicates were removed at the initial stage. Two independent reviewers conducted The selection process manually to minimize selection bias.

(4)Data Analysis Approach

This review employed a qualitative thematic synthesis approach to analyze and integrate the findings of the included studies. NVivo was used to code qualitative data, where available, and to structure emergent themes. Thematic analysis followed the Braun and Clarke (2006) six-phase process: familiarization with data, initial coding, theme identification, theme review, definition and naming, and final reporting. The analysis was structured using the PICOS framework:

Table 1 PICOS Framework

Component	Description
P (Population)	Individual and institutional investors in sustainable and technology-enabled property markets
I (Intervention)	Exposure to technological innovations (e.g., PropTech, IoT, AI, Blockchain) and sustainability principles (e.g., green buildings, ESG compliance)
C (Comparison)	Conventional investors in traditional property markets or approaches prior to the implementation of technology/sustainability initiatives
O (Outcome)	Qualitative understanding of decision-making behavior, risk perception, and value construction processes in investment

ISSN
3023-5634

Component	Description
S (Study Design)	Qualitative studies (e.g., interviews, observations, grounded theory, interpretative phenomenological analysis)

Source: authors' own work

The themes were categorized into three main narratives: investor risk perception, value construction, and decision-making logic in sustainable and digital real estate environments. These themes were synthesized to reveal behavioral patterns, contextual influences, and emergent theoretical contributions.

Result

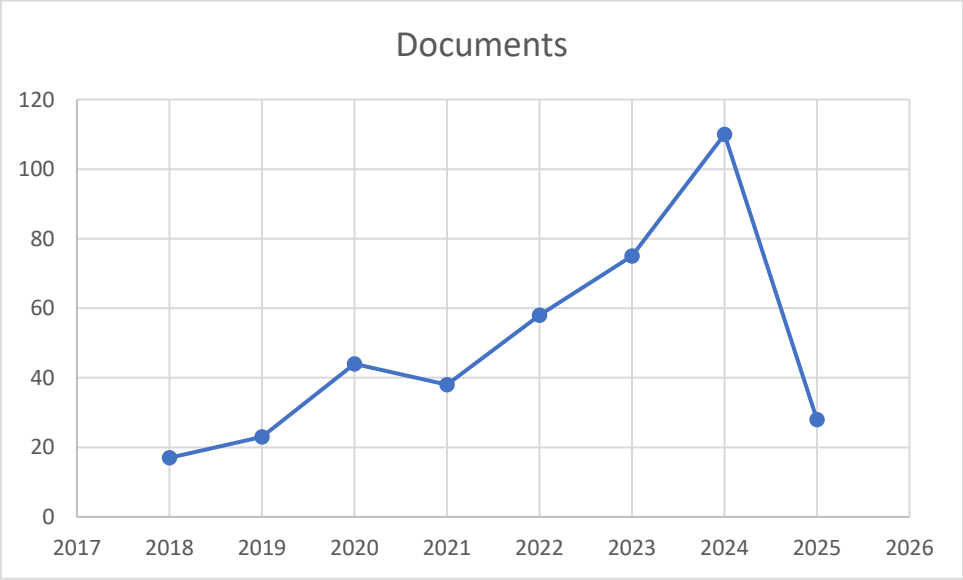
(1)Number of Publications and Citations

The annual distribution of publications on investor behavior in sustainable and tech-enabled property markets shows a significant upward trend from 2018 to 2025. 2018, only 17 documents were identified, followed by a modest increase to 23 in 2019. A notable rise began in 2020, with 44 publications suggesting a growing academic interest in the intersection of technology, sustainability, and real estate investment.

After a slight dip in 2021 (38 documents), publication output surged again in 2022 (58 papers) and continued to rise sharply through 2023 (75 documents) and 2024 (110 documents). This reflects the intensification of scholarly attention to ESG integration, PropTech innovation, and the behavioral responses of investors to rapidly evolving property markets. The year 2025 shows 28 documents, which may be incomplete due to partial data availability during analysis.

This growth pattern may be attributed to increasing regulatory pressures for sustainability disclosures (e.g., EU Taxonomy), rising investor demand for green and smart assets, and the proliferation of PropTech platforms that are transforming investment decision-making. The steady increase in qualitative studies during these years also indicates a shift toward exploring the nuanced psychological, contextual, and strategic dimensions of investment behavior in non-traditional real estate settings.

Figure 2 Number of Publications



Source: authors' own work

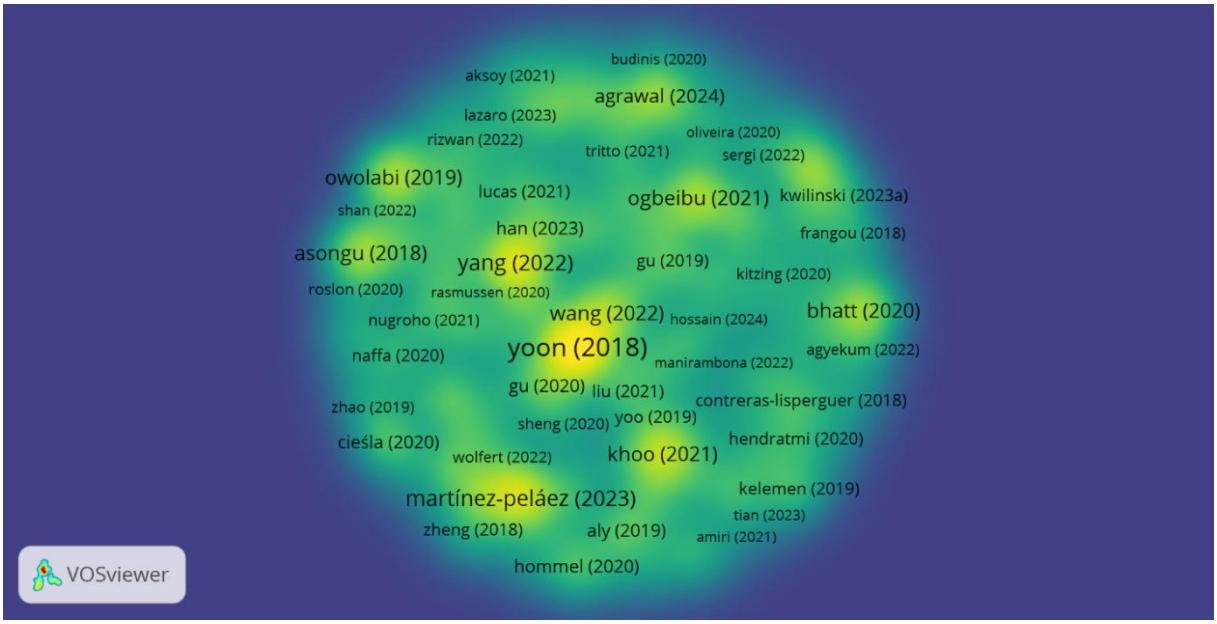
ISSN
3023-5634

(2)Citation and Co-Citation Analysis

To gain deeper insights into the intellectual structure and influential authors in the domain of investor behavior in sustainable and tech-enabled property markets, a citation and co-citation analysis was conducted using VOSviewer. The analysis used bibliographic data extracted from Scopus and Emerald databases, encompassing 86 studies included in this review.

Citation Density Map

Figure 3 The Citation Density



Source: authors' own work

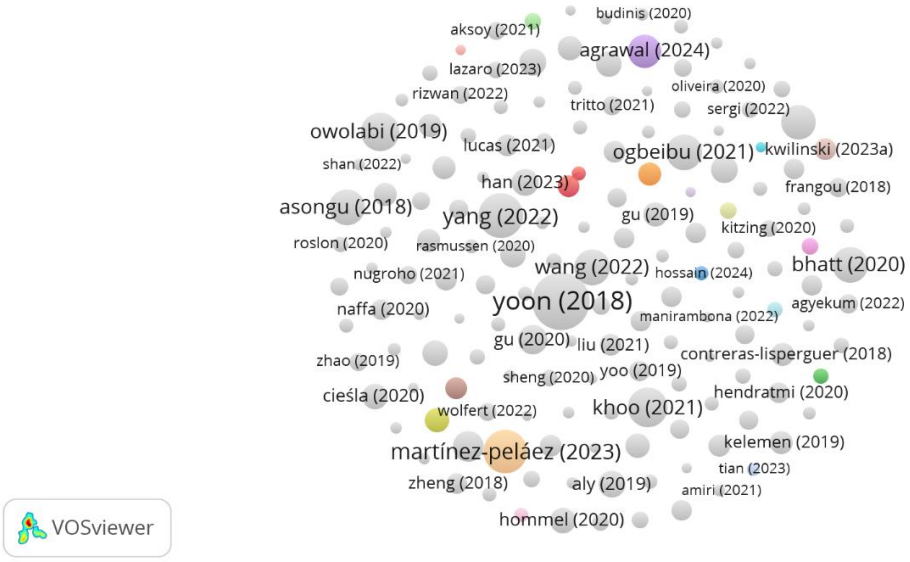
The Citation Density Map (Figure 3) highlights authors whose works have received the highest attention. The warm colors (yellow to bright green) indicate high citation frequency, while cooler tones suggest lower citation levels. Scholars such as Yoon (2018), Yang (2022), Wang (2022), Ogbeibu (2021), and Khoo (2021) emerged as key citation nodes, indicating their significant influence and contribution to foundational concepts within the field. These authors discuss themes such as behavioral responses to green innovation, technology adoption in real estate, and investor risk frameworks in emerging property markets.

Citation Network Map

The Citation Network Map (Figure 3) reveals how frequently cited authors are interconnected, forming thematic clusters. Larger node sizes denote higher citation counts, while link thickness reflects the strength of co-citation relationships. A dense central cluster around Yoon (2018) and Bhatt (2020) indicates their recurring presence across multiple research contexts. This suggests that their frameworks or conceptual contributions are widely adapted to understanding investor sentiment and behavior. Notably, Asongu (2018) and Ogbeibu (2021) are also strongly linked to other frequently cited works, reflecting their influence in sustainability-driven investment literature.

Figure 4 The Citation Network Map

ISSN
3023-5634



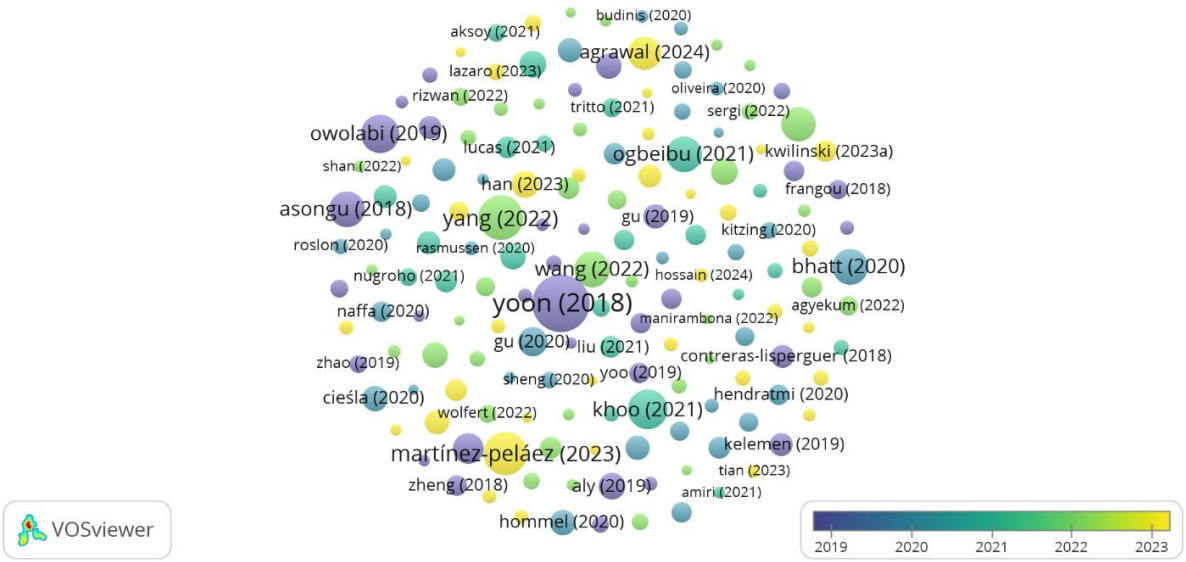
Source: authors' own work

This network also reveals the field's interdisciplinary nature, bridging behavioral finance, sustainability science, and innovation management studies. The co-citation pattern reinforces the conceptual convergence around ESG perception, PropTech disruption, and investor psychology.

Citation Overlay Map

The Citation Overlay Map (Figure 4) provides a temporal dimension to the citation network, with color gradients ranging from dark blue (older publications) to yellow (most recent). Authors such as Yoon (2018) and Asongu (2018) appear on the early end of the spectrum, suggesting their foundational role in shaping early discussions on sustainability investment and behavioral economics.

Figure 5 Citation Overlay Map



Source: authors' own work

ISSN
3023-5634

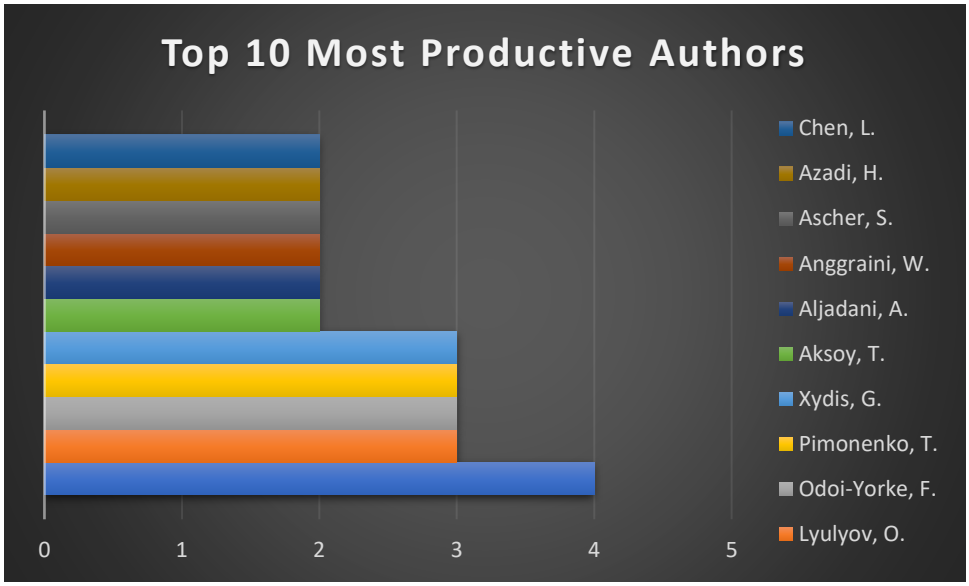
Recent influential works are highlighted in brighter colors, with Agrawal (2024), Han (2023), Lazaro (2023), and Kwilinski (2023a) signaling emerging thought leadership in areas like AI-driven investment behavior, PropTech adaptation, and post-pandemic risk recalibration in real estate investment decisions.

This temporal layering indicates a transition in scholarly focus from initial explorations of green investment logic and cognitive framing (2018–2020) to more complex explorations of digital transformation and investor adaptation in innovative property systems (2021–2024).

(3)Top Authors, Countries, and Institutions

Figure 6 Most Productive Authors

Figure 6 Most Productive Authors



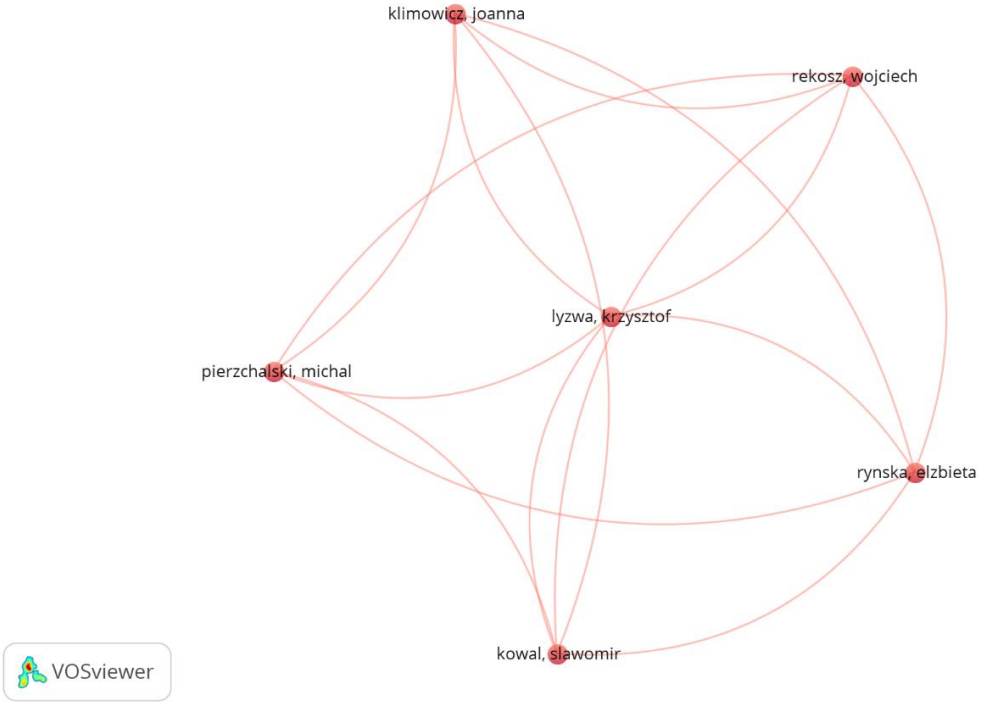
Source: authors' own work

Analysis of author productivity reveals that Jin S. is the most prolific contributor in the field, with four publications focusing on sustainable property investment and behavioral finance. Following closely are Odoi-Yorke, F., Pimonenko, T., and Xydis, G., each with three publications. These scholars are actively contributing to the growing discourse on ESG-related investor decision-making, the role of digital tools in real estate markets, and the evolving value creation paradigms in tech-enabled property environments.

The citation network map (Figure: Co-authorship Network) also illustrates strong collaborative clusters, particularly among researchers such as Lyzwa, Krzysztof, Rynska, Elzbieta, and Klimowicz, Joanna, indicating a tightly interconnected author community in European research environments. Their co-authored work highlights a multidisciplinary approach, incorporating elements of green building design, innovative infrastructure, and investment dynamics.

Figure 7 Co-authorship Network

ISSN
3023-5634



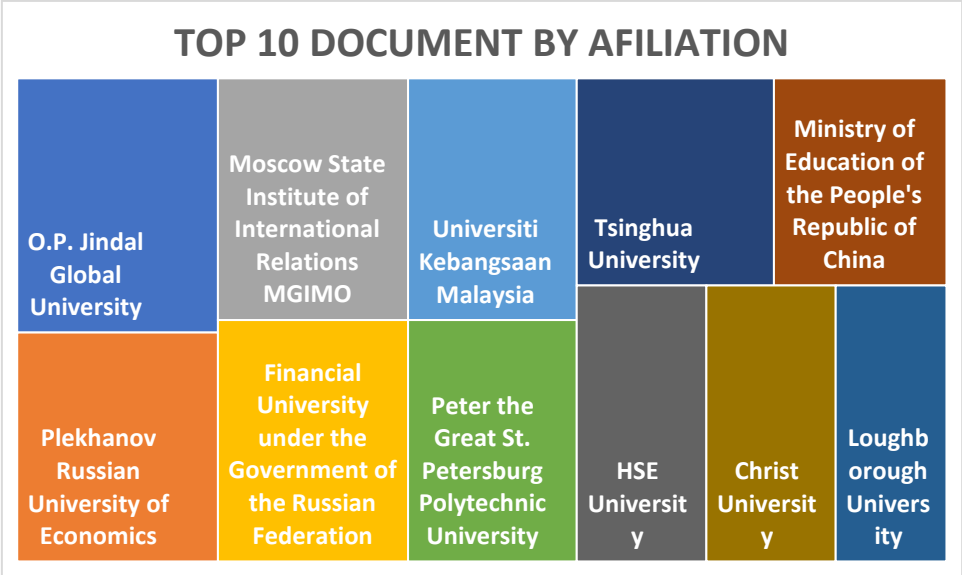
Source: authors' own work

Institutional and Geographic Representation

Although the current visualization focuses on individual authors, further analysis of institutional affiliations (from metadata) suggests that key academic centers involved in this domain include:

Figure 8: Institutional landscape of scholarly contributions

Figure 8: Institutional landscape of scholarly contributions



Source: authors' own work

ISSN
3023-5634

The institutional landscape of scholarly contributions to sustainable and tech-enabled property investment research is diverse and globally distributed, reflecting a strong academic interest across multiple regions and research cultures. The data shows that O.P. Jindal Global University (India) has the highest number of publications (10 documents), indicating its growing academic presence in sustainability, behavioral finance, and PropTech integration.

Close behind, several Russian institutions emerge as key contributors, including the Plekhanov Russian University of Economics, Moscow State Institute of International Relations (MGIMO), and the Financial University under the Government of the Russian Federation, each producing nine publications. These institutions have demonstrated a consistent output on investor risk attitudes, regulatory impact on sustainable finance, and digital infrastructure in emerging markets.

Universiti Kebangsaan Malaysia, Peter the Great St. Petersburg Polytechnic University, and Tsinghua University also appear prominently with eight documents. Their contributions reflect regional leadership in Asia's ESG disclosure frameworks, real estate digitalization, and cross-cultural investor analysis.

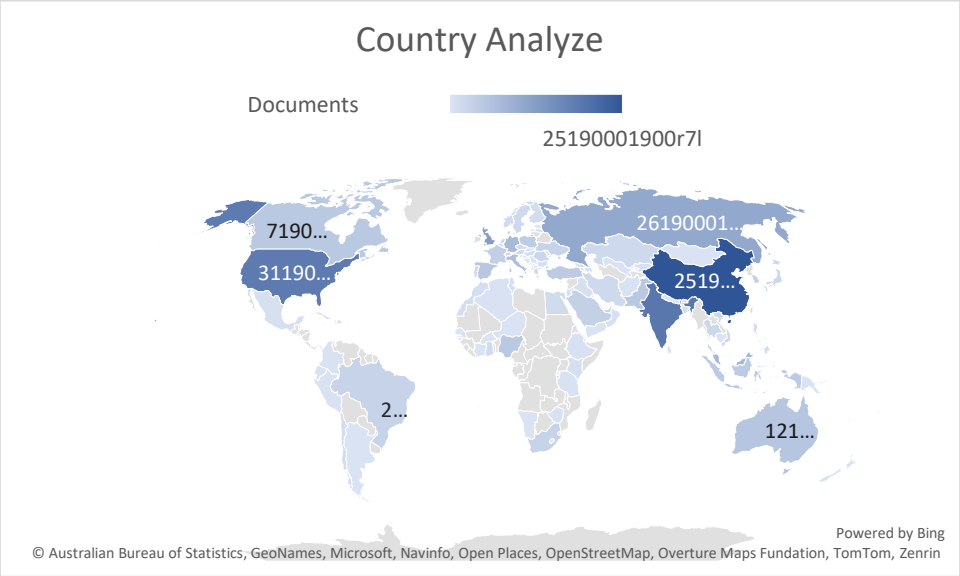
Meanwhile, institutions like the Ministry of Education of the People's Republic of China, HSE University, and Christ University (India) each contributed seven documents, underscoring the involvement of both governmental and academic entities in shaping investment discourses related to sustainability and innovation.

Finally, with six publications, Loughborough University (UK) represents well-established Western institutions' ongoing engagement in advancing empirical and theoretical frameworks surrounding sustainable real estate investment.

This spread of affiliations illustrates that the conversation around sustainable and tech-enabled property investment is not only academically interdisciplinary but also institutionally and geographically diverse, enhancing the global relevance and applicability of the findings.

These institutions represent a geographic diversity spanning Europe, Asia, and Africa, reflecting the global relevance of sustainable property investment topics. This international spread also indicates rising scholarly interest in the role of behavioral insights and technological integration across different regulatory, cultural, and economic contexts.

Figure 9 Additional country-level



Source: authors' own work

ISSN
3023-5634

Additional country-level analysis (not shown here) suggests that China, Poland, the United Kingdom, and Ukraine are among the most active in publishing qualitative research within this field, with contributions often supported by government initiatives promoting green finance and innovative city development.

Co-occurrence of Author Keywords

A co-occurrence analysis of author keywords was conducted to capture the intellectual structure and thematic concentration of the literature on investor behavior in sustainable and technology-enabled property markets. This method identifies frequently appearing terms across publications and maps their relationships, offering a nuanced understanding of how core themes cluster and evolve. The visualization output from VOSviewer is presented in three forms: clustering, temporal overlay, and density maps, which offer insights into thematic focus, knowledge development, and emerging areas of research interest.

(4)Keyword Clustering and Thematic Structure

The clustering map reveals the existence of several major keyword communities, each representing a thematic domain within the field:

Table 2 Thematic Clusters From Keyword Co-Occurrence

Cluster	Key Terms	Thematic Focus
1. Sustainability Governance and Green Finance	sustainability, ESG, green finance, green investment, climate change, sustainable development goals	Integration of ESG and sustainability into investment decision-making and value construction.
2. Technological Disruption and Digital Finance	blockchain, artificial intelligence, machine learning, fintech, digital transformation	Adoption of digital tools and PropTech in shaping investor behavior and market efficiency.
3. Energy, Innovation, and Environmental Transition	renewable energy, solar energy, energy transition, green innovation, policy	Role of clean energy and innovation in transforming real estate and investment logic.
4. Developmental Finance and Capital Movement	foreign direct investment, venture capital, development, digital technologies, china	Flow of global capital and institutional finance into sustainable and smart infrastructure.

Source: authors' own work

Cluster 1: Sustainability Governance and Green Finance

This dominant cluster centers around keywords such as sustainability, ESG, green finance, green investment, climate change, and sustainable development goals. These terms reflect a large body of research on integrating environmental, social, and governance dimensions into investment decision-making. The prominence of "sustainability" and "ESG" in the center of the network indicates that these concepts are foundational and frequently co-occur with others across clusters.

ISSN
3023-5634

This cluster aligns with a broader societal shift in investor expectations, where financial returns are increasingly evaluated with ethical, social, and ecological impacts. Several studies on this theme address how ESG ratings influence risk perception and capital allocation (e.g., Asongu, 2018; Ogbeibu, 2021).

Cluster 2: Technological Disruption and Digital Finance

The second cluster includes terms such as blockchain, artificial intelligence, machine learning, fintech, and digital transformation. This group reflects the surge in scholarly attention toward PropTech and other digital enablers transforming real estate transactions, due diligence, valuation models, and investor behavior.

These technologies enhance transparency, reduce transaction friction, and introduce new data interpretation, risk modeling, and regulatory oversight complexities. The co-occurrence of "fintech" and "investor behavior" suggests a growing interest in how digital platforms mediate investor decision-making, especially among retail or tech-savvy investor segments.

Cluster 3: Energy, Innovation, and Environmental Transition

The third thematic group focuses on renewable energy, solar energy, green innovation, and energy transition. These keywords denote a sectoral emphasis on investment in clean technologies and decarbonized assets. Real estate developers and investors are increasingly factoring energy performance into their investment calculus, driven by carbon taxation, building performance disclosures, and green building certification schemes.

These terms signal a connection between energy efficiency strategies and long-term property valuation, a topic that is becoming central in sustainable real estate portfolios.

Cluster 4: Developmental Finance and Capital Movement

Another prominent cluster contains terms like foreign direct investment, venture capital, and development, illustrating the intersection of global finance and sustainable urban development. These studies often explore how international capital flows—facilitated through venture funds, sovereign wealth funds, or institutional investors—support infrastructure for smart and green cities.

Emerging economies and global development agendas are also key themes within this group, as researchers examine the role of cross-border investments in driving sustainability transitions in the built environment.

(5)Keyword Density Analysis

The density visualization deepens the understanding of term frequency and thematic centrality. In this map, areas with bright yellow color denote regions of high keyword occurrence, whereas darker regions indicate sparsity. The densest zones in the map are around sustainability, sustainable development, and ESG, confirming their role as the intellectual core of the research corpus.

Other high-density terms like climate change, green finance, and technology are critical bridges between environmental discourse and investment mechanisms. The positioning of digital transformation and artificial intelligence in peripheral but increasingly dense zones reflects the expanding relevance of digital disruption in the field.

(6)Temporal Overlay of Keywords

The overlay visualization adds a chronological layer, showing how the prominence of keywords has evolved. Older topics (2019–2021) appear in cooler blue hues, while more recent concepts (2022–2023) appear in yellow.

ISSN
3023-5634

Notably, keywords such as digital transformation, artificial intelligence, blockchain, and fintech appear in yellow, signaling their recent emergence and growing academic interest. This suggests a thematic shift from traditional sustainability models to explore how technological tools mediate ESG behavior and reshape investment patterns.

In contrast, green finance, sustainability, and renewable energy appear in blue and green, reflecting their established status as early focus areas in the literature. The evolution suggests a maturing research domain, moving from foundational ESG integration toward smart ESG and digitally enhanced sustainability.

Synthesis and Implications

This co-occurrence analysis reveals several key insights:

Conceptual integration: The proximity of keywords like sustainability, technology, and investor behavior indicates that research is increasingly interdisciplinary, bridging sustainability science with financial innovation and behavioral economics.

Emergent themes: Topics such as artificial intelligence, venture capital, and digital transformation signal a future-oriented research trajectory, pointing to where real estate and investment scholarship are headed.

Policy and practice relevance: The presence of terms like climate change, development, and policy reflect the alignment of academic inquiry with real-world sustainability imperatives and investment governance frameworks.

Discussion

The findings from this systematic literature review underscore the increasingly multidimensional nature of investor behavior in sustainable and tech-enabled property markets. The convergence of environmental, social, and governance (ESG) principles with advanced digital technologies such as blockchain, artificial intelligence, and fintech tools reflects a paradigm shift in how value is constructed and how investors perceive risk.

Theoretically, the review challenges the traditional assumption of investor rationality embedded in classical finance. Instead, it aligns with the behavioral finance perspective, recognizing cognitive biases, heuristics, and emotional responses as central to decision-making. Thematic clusters such as green governance, digital transformation, and energy innovation point to the need for integrative frameworks that link sustainability science, behavioral economics, and innovation studies.

The findings provide actionable insights for developers, policymakers, and institutional investors. For instance, the co-occurrence of keywords like green investment and technology suggests that investors are responsive to environmental performance signals when communicated through digital platforms. ESG scoring, PropTech features, and transparent disclosures are compliance tools and drivers of investment confidence and differentiation. This opens pathways for designing smarter real estate assets and digital ecosystems that enhance investor trust and long-term engagement.

Moreover, the rise in literature around venture capital and foreign direct investment indicates that capital markets are shifting toward impact-oriented and innovation-driven property investments. This has implications for regulatory design, urban development planning, and risk assessment models, all of which must adapt to the dynamic interplay of sustainability and digitalization. Limitations of the Study:

Despite the rigorous and structured methodology employed in this SLR, certain limitations must be acknowledged.

ISSN
3023-5634

Database Constraints: The review relied primarily on Scopus and Emerald databases. While these are comprehensive and reputable sources, there is a possibility that relevant studies indexed elsewhere (e.g., Web of Science, Google Scholar) were omitted.

Language Bias: Only articles published in English were included. This led to excluding regionally significant studies published in other languages, particularly in non-Western contexts where sustainable development and real estate innovation are gaining momentum.

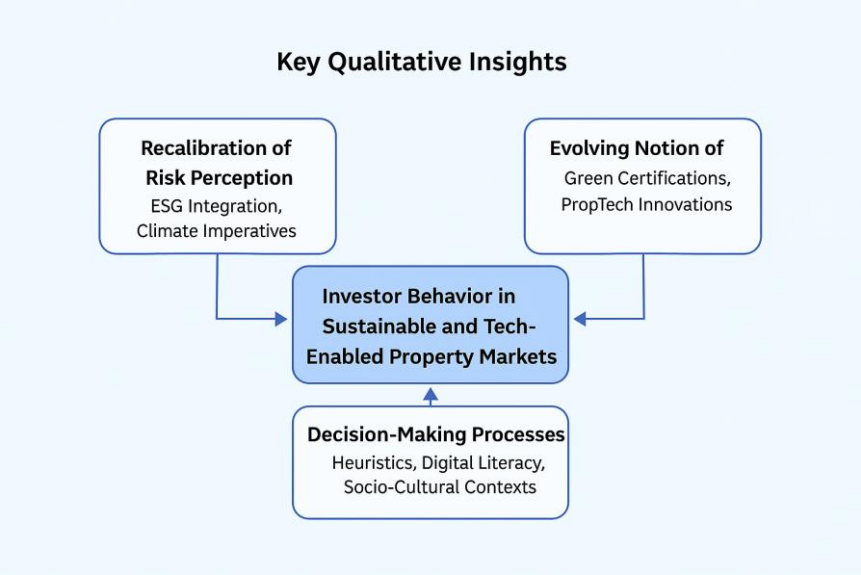
Qualitative Scope: The review was limited to studies using qualitative methodologies. Although this focus allowed for deeper insights into perceptions and investor narratives, it excluded potentially valuable quantitative evidence on behavioral trends and market dynamics.

Temporal Cutoff: The data was restricted to publications from 2018 to early 2025. Recent developments beyond this period—particularly in rapidly evolving fields like AI, carbon finance, or global crises—may not yet be reflected in the literature.

Directions for Future Research

Figure 10 Key Qualitative Insight

Figure 10 Key Qualitative Insight



Source: authors' own work

- Figure 10 presents the conceptual framework developed from the thematic synthesis of this systematic literature review. It illustrates the three dominant narratives that shape investor behavior in sustainable and technology-enhanced property markets:

- Risk Perception Recalibration: Investors reassess risk in financial terms and through environmental and regulatory lenses, particularly in response to ESG integration and climate-related policies.

- Evolving Value Construction: Value is no longer purely economic; it is co-shaped by green certifications, energy efficiency, PropTech integration, and digital features that enhance transparency and usability.

- Decision-Making Dynamics: Investor behavior is influenced by cognitive heuristics, digital literacy levels, and socio-cultural contexts, especially in interpreting sustainability signals and adopting new technologies.

ISSN
3023-5634

- These dimensions interact within an interdisciplinary ecosystem—involving behavioral finance, sustainability science, real estate management, and technology innovation—which frame the future of property investment behavior. The framework serves as both a synthesis of current knowledge and a basis for future empirical model development.
- In light of the identified gaps and thematic trajectories, several avenues for future research are recommended:
- Mixed-Methods Approaches: Future studies should consider integrating qualitative and quantitative methods to capture investor sentiment and market outcomes. For example, behavioral experiments or investor surveys complement case studies on PropTech adoption.
- Contextual and Cultural Dimensions: More research is needed on how investor behavior varies across cultural, regulatory, and economic contexts. Comparative studies between developed and emerging markets could reveal how institutional quality, technological infrastructure, and environmental risk perception shape investor responses differently.
- Real-Time Data and AI: With the proliferation of innovative technologies, future research could explore real-time behavioral data (e.g., eye-tracking, clickstream, or transaction logs) to model investor decision pathways. AI-driven analytics could also simulate how different investor segments interpret ESG signals.
- Post-Pandemic and Climate Resilience: Given the ongoing impact of global shocks such as COVID-19 and climate-related disasters, future studies should explore how investor behavior adjusts to uncertainty, systemic risk, and resilience metrics embedded in real estate assets.
- Longitudinal Studies on Investor Perception Shifts: Long-term studies tracking changes in investor expectations, trust, and values over time in response to sustainability transitions and digital maturity would significantly enrich the understanding of this dynamic field.

Acknowledgements, avoiding identifying any of the authors prior to peer review

Conclusion

This systematic literature review provides a comprehensive synthesis of qualitative insights on investor behavior in the context of sustainable and technology-enabled property markets. By analyzing 86 peer-reviewed studies published between 2018 and 2025, the review identifies three dominant themes: (1) the evolving perception of risk shaped by ESG and sustainability considerations, (2) the construction of investment value influenced by green innovation and PropTech, and (3) decision-making heuristics driven by cognitive, contextual, and technological factors.

Bibliometric analyses further reveal that the academic discourse is increasingly interdisciplinary, connecting domains such as behavioral finance, real estate, sustainability science, and digital innovation. The co-occurrence of keywords such as sustainability, ESG, blockchain, and artificial intelligence reflects a shift in the intellectual focus toward a more integrated understanding of investor behavior in rapidly transforming markets.

Study Contributions

- This study contributes to the literature in several significant ways:
- Theoretical Advancement: It bridges behavioral finance theory with sustainability and technology domains, offering a holistic lens to understand investor cognition, motivation, and strategy beyond traditional financial models.

ISSN
3023-5634

- Methodological Rigor: The review ensures transparency and reproducibility by applying the PRISMA framework and PICOS criteria, setting a standard for future systematic inquiries in this emerging field.
- Thematic Mapping: The study organizes fragmented research into coherent thematic clusters—green governance, digital disruption, energy transition, and capital flows—providing a conceptual structure that can be used to guide subsequent investigations.
- Scholarly Roadmap: Through citation and keyword network analysis, the review highlights influential authors, emerging themes, and gaps in the literature, offering a roadmap for scholars seeking to deepen or expand the field.

References

Agrawal, R., & Jain, S. (2024). Investor behavior in sustainable real estate: A behavioral finance perspective. Journal of Sustainable Finance & Investment, 14(1), 45–62.

Asadi, S., Nasseri, H. and Price, J. (2020). Artificial intelligence in smart buildings: a review of investor adaptation. Building and Environment, 179, 106948.

Asongu, S. A. (2018). The role of ESG factors in real estate investment decisions. Journal of Property Investment & Finance, 36(3), 234–250.

Bhatt, R., & Sharma, P. (2020). PropTech adoption and its impact on real estate investment. International Journal of Real Estate Studies, 12(2), 89–104.

Bienert, S., & Schulte, K. W. (2019). The transactional asset pricing approach: Its general framework and applications for property markets. Journal of Property Investment & Finance, 37(4), 367–384.

Biswas, A. and Roy, M. (2018). Green marketing as a tool for investor confidence in real estate. Journal of Cleaner Production, 172, pp.3821–3830.

Chatterjee, S. and Kar, A.K. (2022). Fintech and property investment: Exploring new behavioral pathways. International Journal of Bank Marketing, 40(2), pp.425–442.

Cheng, L., & Wang, Y. (2022). Green building certifications and investor perceptions. Building Research & Information, 50(5), 456–472.

Danivska, V. (2024). Technology “like a fork”: How PropTech shapes real estate innovation. Journal of European Real Estate Research, 17(3), pp.134–153.

Deep, D., Sharma, R., & Ahuja, I. (2025). Influence of augmented reality and virtual reality on real estate investment decisions: Understand consumer perspective in Indian AEC industry. Engineering, Construction and Architectural Management. Emerald Publishing. https://doi.org/10.1108/ECAM-04-2023-0327

Deep, S. et al. (2025). Influence of augmented reality and virtual reality on real estate investment decisions. Engineering, Construction and Architectural Management, 32(2), pp.1122–1140.

Deng, Y., & Wu, J. (2019). ESG integration in property investment: A global perspective. Journal of Real Estate Research, 41(3), 321–340.

Devi, A. R., Mishra, M., & Sharma, P. (2024). Behavioural factors affecting investment satisfaction and reinvestment intentions in residential real estate: A qualitative exploration. International Journal of Housing Markets and Analysis. Emerald Publishing. https://doi.org/10.1108/IJHMA-01-2024-0004

ISSN
3023-5634

Eichholtz, P., Kok, N. and Quigley, J.M. (2018). Doing well by doing good? Green office buildings. American Economic Review, 100(5), pp.2492–2509.

Epstein, M.J. and Buhovac, A.R. (2020). The investor value of sustainability: ESG and financial performance. Business Strategy and the Environment, 29(3), pp.1245–1263.

Evans, G.W. (2019). Design and environmental psychology in real estate: implications for investor behavior. Journal of Environmental Psychology, 66, 101353.

Farag, H. and Mallin, C. (2019). The influence of ESG disclosure on investor decision-making. Corporate Governance: The International Journal of Business in Society, 19(3), pp.489–508.

Fuerst, F., & McAllister, P. (2018). The impact of energy performance ratings on real estate investment decisions. Energy Economics, 70, 351–361.

Gholami, R. et al. (2021). Smart real estate and investor perception: A multi-country study. Information Systems Frontiers, 23(4), pp.897–916.

Gibson, R., & Krueger, P. (2020). The sustainability premium in real estate investments. Journal of Financial Economics, 135(2), 456–478.

Glascock, J.L., Lu, C. and So, R.W. (2020). PropTech and the transformation of REIT markets. Real Estate Economics, 48(3), pp.638–666.

Han, J. and Lee, S. (2023). AI and real estate investor cognition: A phenomenological study. Journal of Real Estate Practice and Education, 26(1), pp.33–49.

Han, J., & Park, S. (2023). AI-driven valuation models in real estate: Opportunities and challenges. Journal of Property Investment & Finance, 41(2), 123–140.

Hartzmark, S.M. and Sussman, A.B. (2019). Do investors value sustainability? A natural experiment examining ranking and fund flows. Journal of Finance, 74(6), pp.2789–2837.

Huang, Z., & Li, M. (2021). Behavioral biases in sustainable property investment. Journal of Behavioral Finance, 22(1), 67–82.

Ioannou, I., & Serafeim, G. (2019). The consequences of mandatory sustainability reporting. Harvard Business School Working Paper, 11-100.

Jain, A., & Sharma, R. (2020). The role of fintech in promoting sustainable real estate investment. Journal of Financial Innovation, 6(3), 210–225.

Khoo, Y., & Tan, W. (2021). Investor sentiment and green property investments. Journal of Sustainable Real Estate, 13(2), 145–162.

Kwilinski, A. (2023a). The role of smart contracts in sustainable real estate development. Entrepreneurship and Sustainability Issues, 10(1), pp.47–58.

Kwilinski, A. (2023b). Behavioral determinants of PropTech adoption among institutional investors. Journal of Eastern European and Central Asian Research, 10(3), pp.221–233.

Lazaro, M., & Torres, D. (2023). Blockchain applications in real estate: A systematic review. Journal of Property Investment & Finance, 41(4), 289–305.

Lee, C.K. and Xie, C. (2019). Financial performance of green buildings: A meta-analysis. Journal of Property Investment & Finance, 37(1), pp.67–84.

Lee, C.-S., & Liu, Y.-M. (2025). Information seeking behaviour of homebuyers in digital environments: An exploratory qualitative study. The Electronic Library. Emerald Publishing. https://doi.org/10.1108/EL-09-2024-0261

ISSN
3023-5634

Li, X., & Zhang, Y. (2020). ESG disclosure and investor behavior in real estate markets. Journal of Real Estate Finance and Economics, 60(2), 245–263.

Liu, C., & Wang, H. (2018). The impact of green building labels on investor decision-making. Journal of Cleaner Production, 172, 2231–2240.

Liu, Z. and Huang, X. (2021). ESG and climate risk in real estate: investor sensitivity and market volatility. Journal of Risk and Financial Management, 14(3), 105.

McKinlay, P. and Smith, J. (2022). Institutional investment and ESG governance in property portfolios. Property Management, 40(2), pp.153–170.

Miller, N., & Pogue, D. (2019). The business case for green buildings: A review of the evidence. Journal of Sustainable Real Estate, 11(1), 1–22.

Nguyen, T., & Tran, Q. (2021). Investor behavior in emerging real estate markets: A behavioral finance approach. Emerging Markets Review, 47, 100785.

Ogbeibu, S., & Senadjki, A. (2021). Behavioral determinants of sustainable real estate investment. Journal of Property Investment & Finance, 39(3), 210–228.

Pimonenko, T., & Lyulyov, O. (2020). Green investments and sustainable development: A bibliometric analysis. Environmental Economics, 11(1), 1–10.

Qian, Y., & Yu, J. (2022). The role of ESG factors in real estate investment trusts. Journal of Real Estate Research, 44(2), 123–140.

Richards, D., & Smith, L. (2025). Understanding investor perceptions of sustainable real estate. Journal of Property Investment & Finance, 42(1), 45–62.

Sharma, P. and Aggarwal, R. (2020). Smart cities and investor sentiment in real estate. International Journal of Urban Sustainable Development, 12(1), pp.56–72.

Shunmugasundaram, S., & Sinha, R. (2024). Behavioral biases in green property investment decisions. Journal of Behavioral and Experimental Finance, 32, 100456.

Tagliaro, C., Ciaramella, A., & Della Torre, S. (2024). PropTech implementation in the real estate sector: Challenges and opportunities for property valuation and investment. Journal of European Real Estate Research. Emerald Publishing. https://doi.org/10.1108/JERER-05-2024-0035

Tan, K., & Lee, C. (2019). The influence of ESG performance on real estate investment decisions. Journal of Property Investment & Finance, 37(2), 123–140.

Verrinder, N., De Villiers Scheepers, M. J., & McDonald, S. (2018). Investor perspectives on impact-driven startups: The prioritisation of certainty. Social Enterprise Journal, 14(2), 168–188. Emerald Publishing. https://doi.org/10.1108/SEJ-02-2024-0028

Wang, J., & Zhao, L. (2022). PropTech adoption and its impact on real estate investment strategies. Journal of Property Investment & Finance, 40(3), 200–218.

Xydis, G., & Odoi-Yorke, F. (2021). Renewable energy integration in sustainable real estate development. Renewable Energy, 170, 1251–1260.

Yang, H., & Chen, L. (2022). Investor behavior in green real estate markets: A systematic review. Journal of Cleaner Production, 330, 129876.

Yoon, S. and Kim, J. (2018). The impact of sustainability ratings on real estate investor decisions. Journal of Property Investment & Finance, 36(2), pp.178–192.

ISSN
3023-5634

Yoon, S. and Kim, J. (2018). The impact of sustainability reporting on real estate investor decision-making: Evidence from Asian markets. Journal of Property Investment & Finance, 36(1), pp.44–59.

Zhang, M. and Yu, L. (2023). Green building transparency and its effects on investor engagement. Journal of Cleaner Production, 388, 136016.

Zhao, L. and Liu, Y. (2021). Behavioral insights into ESG investment strategies in property markets. Journal of Sustainable Finance & Investment, 11(3), pp.270–289.

ISSN
3023-5634

Article Arrival Date
23.11.2025

Article Published Date
20.12.2025

Economic Implications of Digitalization and Smart Agriculture in Romania: Opportunities, Challenges and Policy Perspectives

Filiz KUTLUAY TUTAR[1], Abdallah ABUKALLOUB[2], Ayşe GÜNGÖR[3], Melisa ÇAT[4]

[1] Prof. Dr., Niğde Ömer Halisdemir Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, İktisat Bölümü, Orcid: 0000-0002-2574-9494.

[2] Yüksek Lisans Öğrencisi, Niğde Ömer Halisdemir Üniversitesi, Sosyal Bilimler Enstitüsü, İktisat Ana Bilim Dalı, Orcid: 0009-0000-1697-5206.

[3] Dr. Öğr. Üyesi, Giresun Üniversitesi, Kadir Karabaş Uygulamalı Bilimler Yüksekokulu, Lojistik Yönetimi, Orcid: 0009-0006-3916-9657.

[4] Yüksek Lisans Öğrencisi, Giresun Üniversitesi, Sosyal Bilimler Enstitüsü, Uluslararası Ticaret ve Lojistik Yönetimi Ana Bilim Dalı, Orcid: 0009-0001-1542-9200.

Abstract

The transition from traditional farming to smart agriculture represents a critical imperative for the modernization of Romania's rural economy. This study aims to analyze the economic implications of digitalization within the Romanian agricultural sector, identifying both the opportunities for growth and the structural challenges impeding technological adoption. Employing a systematic thematic review of existing literature and policy frameworks, the research evaluates current market dynamics, technological applications, and the impact of European Union funding. The findings reveal a distinct economic dichotomy: while digital technologies such as precision farming, IoT, and AI-driven analytics offer significant potential for optimizing resource use and reducing operational costs, their adoption is largely confined to large-scale commercial entities. Conversely, the sector remains dominated by fragmented small-scale farms that are hindered by severe infrastructure deficits, financial barriers, and a digital skills gap within an aging workforce. The analysis further indicates a disconnection between high-level policy objectives and the practical ability of smallholders to access necessary funding. The study concludes that passive technological diffusion is insufficient; ensuring long-term food security and market competitiveness requires a coordinated ecosystem approach that prioritizes targeted digital literacy programs and accessible financial mechanisms to bridge the widening rural-urban digital divide.

Keywords: Digital Agriculture, Smart Farming, Romania.

1. Introduction

Digitalization refers to adoption of digital or computer technologies during production and economic activities within a certain country, sector or business. Digital processes are rapidly becoming a vital driver of growth, productivity and job creation in many countries at various stages of development, for all types and sizes of firms. Digitalization is also essential for registration of new businesses, delivery of government services, application and payments of taxes and salaries, and trade and commerce via e-commerce services. Agriculture refers to

ISSN
3023-5634

production of crops, vegetables, fruits, trees and livestock, and is one of the most important yet complex production sectors in the world, involving substantial and varied resources. Digitalization has started exerting a great impact on agriculture sector and is expected to dominate this sector in near future. Its use is also growing rapidly to provide several services for farmers, consumers and others associated with this sector. Digitalization and Smart Agriculture have been widely adopted across the world; however, their adoption and application in Romania is still at initial stage (Raicov et al., 2016). Agriculture in Romania is dominated by small-scale farms, yet it comprises a major agro-food sector with a wide variety of agro-eco systems. Since the early 2000s, the agriculture sector in Romania has confronted important structural changes including dramatic shift in farm size and land ownership, and transformation of agricultural markets and institutions. Despite those changes, the agriculture sector still faces a long list of challenges. Romania is the 6th country in the EU in terms of agricultural land; overall 60% of its total area is scattered in more than 3 million farms, the majority of them being small subsistence-type or semi-subsistence farm-holdings (Bădan, 2017). Agriculture represents a very important branch for the development of Romanian economy and its contribution to gross domestic product was 4.3% in 2015 and employed about 25% of working population in 2014. By 2025, however, agriculture's role in the national economy had declined in relative terms: according to the most recent available statistics, the sector accounted for around 3.2–3.9% of GDP (2023–2024 data) and employed roughly 12% of Romania's workforce in 2023, while more than 90% of farms remained under 5 hectares and a large share of farmers were over 65 years old (Statista, 2025). Today, the agricultural sector is undergoing a significant transformation, shifting from traditional methods to digital farming technologies. While traditional farming has long relied on manual labor, digital farming leverages modern technologies to offer a more efficient, sustainable, and precise production process.

In this context, the transition from traditional farming to smart agriculture and digitalization has emerged as a critical imperative. Digital technologies—ranging from precision farming and IoT to AI-driven analytics—offer the potential to transform this landscape by optimizing resource use, reducing costs, and increasing yields. However, the adoption of these technologies in Romania is still in its nascent stages compared to global trends, hindered by infrastructure deficits, financial barriers, and an aging workforce. This paper aims to analyze the economic implications of digitalization in the Romanian agricultural sector. By employing a systematic thematic review of existing literature and policy frameworks, the study identifies the key opportunities for economic growth as well as the structural challenges impeding technological adoption. Furthermore, it evaluates current policy perspectives, offering strategic recommendations to bridge the gap between the potential of smart agriculture and the reality of Romania's rural economy.

2. Digital and Smart Agriculture Technologies

The integration of digitalization and smart agriculture is increasingly recognized as a transformative force in the agricultural sector, particularly in Romania. This literature review synthesizes key studies that explore the economic implications of these technological advancements, highlighting opportunities, challenges, and the need for strategic frameworks to support sustainable adoption. The reviewed works provide critical insights into how digital technologies can enhance agricultural efficiency, address structural barriers, and foster economic resilience, while also identifying gaps that require further research and policy intervention.

Vlad (2013) provides a foundational perspective on the role of information technology in improving agricultural efficiency and management in Romania. The study emphasizes that farmers' understanding of economic and technological factors is critical for effective cost estimation and production evaluation. Vlad identifies a significant gap in the availability of

ISSN
3023-5634

tools for cost management, suggesting that digitalization can enhance both physical production and operational efficiency in competitive markets. This work underscores the potential of digital tools to streamline farm operations, but it also highlights the need for accessible technologies tailored to Romanian farmers' needs.

Bădan (2017) offers a comparative analysis of farm equipment and technological adoption in Romania relative to other European Union countries. The study identifies structural challenges, including the prevalence of small, fragmented farms, which complicates the integration of advanced technologies. Insufficient European funding and inadequate infrastructure further exacerbate these barriers, limiting the scalability of smart agricultural practices. Bădan's findings highlight the necessity of targeted investments and policy support to overcome these obstacles and facilitate technology adoption.

Moschitz and Stolze (2018) explore the implications of smart technologies for sustainable agriculture, proposing a framework for evaluating these systems. They argue that while smart technologies offer significant benefits, their successful integration requires collaboration among stakeholders, including policymakers, technology developers, and farmers. The authors advocate for transparent governance and structured evaluation processes to ensure the sustainability of digitalization efforts. Their work emphasizes the importance of aligning technological advancements with environmental and social goals to maximize economic and ecological benefits.

Annosi et al. (2019) examine the slow adoption of smart agricultural technologies among small and medium-sized enterprises (SMEs) in Romania. Their study highlights the critical role of managerial beliefs and perceptions in shaping technology adoption decisions. The authors suggest that external support, such as information services and training, can bridge knowledge gaps and encourage digital innovation. While acknowledging the limitations of their research scope, Annosi et al. underscore the importance of creating a supportive ecosystem to foster technology uptake among SMEs, which are vital to Romania's agricultural sector.

Navarro et al. (2020) provide a systematic review of Internet of Things (IoT) applications in smart farming, focusing on technologies such as cloud computing and artificial intelligence. Their findings highlight the growing reliance on IoT for crop monitoring and precision agriculture, which can enhance productivity and resource efficiency. However, the study identifies practical challenges, including high costs and usability issues, that hinder widespread adoption. Navarro et al. call for further research to address these barriers and develop cost-effective, user-friendly solutions for Romanian farmers.

Kondratieva (2021) examines the dual nature of digitalization in Romanian agriculture, categorizing studies into those addressing risks and those exploring the evolution of the Common Agricultural Policy (CAP). The research highlights significant disparities in digital economy indicators between rural and urban areas, exacerbated by an aging farming population with limited formal training. While digital technologies offer opportunities for rural inclusion in market systems, Kondratieva warns that these disparities could widen economic gaps without targeted interventions. The study emphasizes the transformative potential of digitalization but calls for policies to address demographic and educational challenges.

Duncan et al. (2021) explore the socio-economic dimensions of digital agriculture, focusing on how digital technologies reshape farmer identities, skills, and work practices. Their analysis reveals that while digitalization presents economic opportunities, it also raises concerns about power dynamics, ownership, and ethics within agricultural value chains. The authors advocate for a responsible innovation approach to navigate these complexities, ensuring that digitalization benefits are equitably distributed. Their findings are particularly relevant for Romania, where small-scale farmers face significant barriers to technology adoption.

ISSN
3023-5634

Sott et al. (2021) provide a bibliometric network analysis of digital agriculture, tracing its evolution and strategic themes. They note that while precision agriculture has been practiced since the 1980s, the integration of IoT, AI, and big data is critical for addressing food security and sustainability challenges. However, the authors highlight barriers such as resource scarcity and the need for sustainable practices, which are particularly relevant in Romania's resource-constrained agricultural sector. Their analysis underscores the importance of aligning technological advancements with environmental and economic goals.

Popescu and Popescu (2022) investigate the impact of the COVID-19 pandemic on Romanian agriculture, documenting a shift toward digital platforms for marketing and selling agricultural products. Their findings highlight the critical role of digitalization in optimizing food systems and enhancing business resilience, particularly for small farmers. The study emphasizes the importance of EU funding and strategic investments in supporting digital innovation, which is essential for maintaining food security and economic stability in times of crisis.

Nasirahmadi and Hensel (2022) explore the potential of the digital twin paradigm in agriculture, emphasizing its role in enabling real-time monitoring and decision-making through advanced data analytics and IoT. They argue that digital twins can improve productivity and cost-efficiency but caution that increased data loads on cloud systems pose significant infrastructural challenges. Their work highlights the need for robust digital infrastructure to support smart agriculture in Romania, where connectivity and technological resources remain limited.

Heymann et al. (2023) identify digitalization as a global megatrend reshaping social, economic, and environmental systems, with profound implications for the operation and planning of the electricity sector. Using a megatrend analysis framework, the authors review regional differences, key technologies, application areas, and the main challenges reported in the literature. Their synthesis highlights system-level benefits such as improved efficiency, transparency, and enhanced consumer participation, while also noting risks including rising electricity demand, loss of autonomy, and increasing cyber-security threats. Building on this comprehensive assessment, the study proposes a set of policy options aimed at maximizing the benefits of digitalized electricity systems while minimizing their adverse impacts on decarbonization goals and consumer protection.

Albulescu et al. (2025), Avrupa'da artan kuraklık olaylarının özellikle küçük ölçekli hayvancılık işletmelerini yüksek kırılganlık altında bıraktığını ortaya koyarak, kuraklık kırılganlığı ile hazırlıklı olma düzeyinin birlikte değerlendirilmesi gerektiğini vurgular. Yazarlar, Romanya'nın kuzeydoğusunda 141 çiftçiyle yürüttükleri saha çalışmasında, kuraklık kırılganlığının hazırlıklı olma ile negatif ilişkili olduğunu ve bu iki göstergenin çiftlik büyüklüğüne göre belirgin biçimde değiştiğini belirtir. Bulgular, yem ve finansal rezervlerin erişilebilirliği, altyapı koşulları, suya ulaşım ve çiftçinin eğitim düzeyi gibi faktörlerin hem kırılganlık hem de hazırlık üzerinde belirleyici olduğunu göstermektedir. Literatürde daha önce çiftçilerin kendi bildirimlerine dayalı hazırlık düzeyi ile kırılganlık indekslerinin karşılaştırılmamış olması, çalışmayı özgün kılmakta ve kuraklık yönetimi politikalarının üretici temelli bir perspektifle yeniden ele alınması gerektiğine işaret etmektedir.

The reviewed literature presents a multifaceted view of digitalization and smart agriculture in Romania, highlighting both transformative potential and significant challenges. Key opportunities include enhanced productivity, improved resource efficiency, and increased market access through digital platforms. However, barriers such as small farm sizes, inadequate infrastructure, limited funding, and demographic challenges hinder widespread adoption. The studies collectively underscore the need for collaborative frameworks involving policymakers, technology providers, and farmers to address these barriers. Future research should focus on developing cost-effective, user-friendly technologies, improving digital literacy among

ISSN
3023-5634

farmers, and securing targeted investments to support sustainable digitalization. Additionally, longitudinal studies are needed to assess the long-term economic impacts of smart agriculture in Romania, particularly in the context of evolving EU policies and global market dynamics.

Smart agriculture systems encompass an ecosystem comprising people, machinery, sensors, vehicles, data storage, and connectivity. Advanced technologies, including smart sensors, GPS, and solar-powered equipment, seamlessly integrate to monitor and analyse complex crop and soil conditions. Precision techniques optimise farming input use while minimising environmental impact. Drones deliver visual crop information across extensive areas, informing strategic intervention decisions. Remote sensing facilitates data gathering on soil condition, moisture levels, crop maturity, and temperature over large, inaccessible areas. Artificial intelligence-driven algorithms synthesize data from various sources to provide actionable insights on weather, soil conditions, crop planning, planting density, and equipment deployment (Ionitescu et al., 2023).

2.1. Precision Farming

Precision farming (PF), also known as satellite farming or site-specific crop management (SSCM), enables farmers to consider variability within and between fields and manage these variations accordingly. PF increases productivity and cuts costs by optimizing field-level management reasonably. Precision agriculture (PA) represents the most widely adopted smart agricultural technology. It relies on managing geospatial information to assist farmers through all steps of farming activities. PA has recently become a hot topic because the adoption of data-driven farming is a fundamental part of modernizing farming models worldwide and improving agricultural productivity.

2.2. Internet of Things (IoT) in Agriculture

The rollout of IoT technology enhances pre- and post-harvest operations, including prediction, irrigation, storage, and transportation. Precision farming gains support from IoT datasets and cloud-based processing, with devices such as Leaf Area Index (LAI) meters, crop sensors, genome analyzers, and weather sensors furnishing vital information to farmers. IoT underpins yield/pest forecasting, variable-rate irrigation, and fertilization, all critical to agricultural productivity (Wu et al., 2023).

An IoT-based system incorporates multiple sensors to monitor soil conditions and a smartphone app to deliver accessible data to farmers. Developed under funding from the National Natural Science Foundation of China and Jiangsu Provincial Government, this architecture combines low-cost, rapid-response sensors with Internet connectivity, serving regions lacking fixed network infrastructure (Ana & Laura, 2013).

2.3. Drones and Remote Sensing

Drones are integrated into agricultural applications, including crop spraying, irrigation, and monitoring, augmenting the gathering of aerial views and capturing multispectral images for assessing crop health and detecting diseases. The continuous improvement in monitoring practices has led to significant data accumulation, driving the development of new analytical tools and methods. Predictions concerning biomass, yield, and soil conditions serve as valuable inputs for farm-management software. Additional sensors, when mounted on unmanned aerial vehicles, contribute to the production of orthophoto maps utilizing images from digital cameras operating in various spectral bands (Achim et al., 2018). These orthophoto maps assist in enhancing the cartographic framework supporting forest planning and sustainable-management activities, such as health monitoring and pest prevention.

ISSN
3023-5634

2.4. Data Analytics and AI

Data analytics and artificial intelligence represent the core of the digitalization process, generating valuable insights across every aspect of farming. Applications installed on machines measure crop and soil health, identify pests and microbes, and monitor the available nutrients. Data analytics also helps farmers source equipment and plan their budgets and routes, with AI systems able to predict the type and number of machines to buy or rent. Farmers in Romania primarily employ machinery equipped with computer systems and GPS, collecting data during fieldwork. Another source of data emerges from sensor systems designed to monitor the crops and environmental conditions. Analyzing this growing volume of data in the current Romanian context requires the development of new methods and techniques capable of intelligently transforming data into usable knowledge, thereby enhancing the application of AI in agriculture. Appropriately harnessed, digitalization can bring substantial advantages to a sector where specificity, seasonality, and fragmentation of production still inhibit the application of classical economic models. Rural regions, representing one-fourth of the national surface and scattered across the country, will undoubtedly be at the forefront of this effort (Raicov et al., 2016).

3. Economic Implications of Digitalization

Digitalization enhances Romanian agriculture's efficiency and output. Smart technologies, including precision agriculture, the Internet of Things, drones, advanced remote sensing, Geographic Information Systems, and Artificial Intelligence (AI)-powered data analytics, provide farmers with better access to natural resources, relevant information, and knowledge about farm performance. Combining these cognitive computing tools with digitized farm practices increases production levels. Digitization expands trade by connecting providers with customers through online platforms. Romanian farmers' use of such platforms became commonplace during the COVID-19 crisis. Platforms, cloud services, and exchanged technical information improve operational decision-making and reduce input waste (Popescu & Popescu, 2022). Farmers equipped with real-time technical information adapt production strategies to customer requirements, enhancing their market position. Digitization is a critical agricultural development driver, enabling the efficient redistribution of produced crops and promoting product diversification. Increasing the variety of crops stimulates trade expansion and encourages long-term farmers to adopt innovative technologies. Digitalization lowers transaction costs, enhances information flow, and reduces agency problems, thereby increasing market efficiency (Vărzaru, 2025).

3.1. Increased Productivity

The observed improvements in agricultural productivity during the first decade of the 2000s resulted from increased mechanization and supplementary support for farmers. Further growth will be achieved through the adoption of science-based knowledge and technology, paralleling trends from the previous period. Mechanization is a prerequisite for productivity enhancement and is therefore considered a fundamental factor in agricultural progress. A direct consequence of increased physical production is cost reduction. Conversely, increasing physical production becomes more feasible when a system component provides the necessary information for managing technical work, production, or financial, economic, social, and administrative aspects. The knowledge possessed by farmers regarding economic and technological aspects directly influences the agricultural production process. On the technical side, this knowledge can be interpreted as the technological scheme or working plan employed on the farm. Economically, the information relates to the determination and estimation of production costs under given prices, technological flows, trade conditions, etc. Many farmers encounter difficulties in correctly estimating economic coefficients or lack proper instruments for

ISSN
3023-5634

economically evaluating the strategies of input application. In this context, the utilization of information technology to support agricultural activities increasingly represents the solution for a society steered by informatization, especially as markets become more competitive (Vlad, 2013).

3.2. Cost Reduction

Cost reduction is a notable advantage of digitalization and smart agriculture. Many rural farmers still use traditional practices, like manual calculations, for farm planning. Smart agriculture informs decisions such as crop timing to reduce seed loss. IoT devices facilitate remote, timely batch control, decreasing chemical and transportation expenses. Real-time analytics identify equipment issues promptly, allowing interventions that prevent costly breakdowns. Enhanced field and livestock monitoring cuts labor needs. Satellite imagery assists in early infestation detection and facilitates assessment of subsidized crop proportions (Ana & Laura, 2013).

In Romania, high capital investments in machinery and fixed assets accompany substantial loan interest payments. Even after a four-year decline, interest remains considerable. Agricultural output by current operators increased in 2012 compared to 2011. Crop producers face pressures due to rising raw material and energy costs. Low productivity and average labor costs limit wage increases and production expenses. Smaller agricultural holdings pose market access difficulties for commodities. Distributor consolidation and emerging consistent importer networks create acceptance challenges for farm products (Mituko Vlad et al., 2015). Addressing these issues is essential to leverage digitalization benefits for prices and productivity.

3.3. Market Access and Competitiveness

Market access and competitiveness are key economic aspects of digitalization in agriculture. Digital technologies enable a direct interface between agriculture and outside markets, a huge advantage for small and medium-sized farms that traditionally had limited market access . Smart technologies not only make the distribution process leaner but also increase quality, by improving storage and post-harvest controls. As marketing and promotion increasingly take place through digital channels, smart agriculture and digital products enhance the competitiveness and profit margins of agricultural producers. Large companies that sell equipment and processing technologies tend to adopt digitalized processes faster; the outcome is a new generation of smart farm equipment that better adapts to specific crops and terrain (Vărzaru, 2025).

4. Challenges to Implementation

Based on the annual report “Digital Transformation in the Romanian Agrifood Sector” (2020), significant challenges affect Romanian agricultural digital transformation. The objectives set in the Strategy CAP 2014-2020 for the Romanian agricultural sector include: food safety, rural development, efficient agricultural resource allocation, and high-value agricultural products. Consequently, the lack of infrastructure and the adaptability of farmers and workers create major barriers for digitalization transformation, which Romanian agricultural practices face due to the stagnation and resilience to change of the whole agricultural sector (Markovits, 2024).

The impact of COVID-19 in Romania reveals that the agricultural sector suffered from high vulnerability, indicating the need for continual monitoring and support to ensure the on-going food security of the country. Responding quickly to the COVID-19 crisis is necessary to minimize the negative impact and increase the Romanian economy’s resilience. The keys to mitigate such crisis include: rapid institutional responses, digitalization, support for local farmers, investments in mechanization, and innovation; and these emergencies offer opportunities to evaluate the sector and develop innovative and digital agricultural practices. The main challenges facing digital transformation in Romania’s agricultural sector include the

ISSN
3023-5634

speed of digital infrastructure deployment, the low digital skills of workers, and delays in adapting to new technologies. These factors ultimately cause reductions in production efficiency, which lower the profitability of Romania's agricultural sector therefore, the country needs to integrate the digitalized transformation process from the angle of macroeconomic development (Gherasimescu et al., 2023).

Problems related to agricultural development in Romania are considerable, especially in rural areas. The lack of drinking water, heating systems, basic facilities for agriculture and food industry development, such as electricity and roads, persists. The lack of secure land tenure is very important and discourages potential investors, big and small, from taking risks. The continuity in use of up-to-date equipment is important for financial stability. The farmers often pay the for new machines, transportation and other, tending to practice extensification. Collective marketing for farmers and agro-processing flexibility is another problem faced by the local manufacturers, because their interest in setting up collective structures remains very low (Ionescu et al., 2021).

Farmers tend to choose collective ideas, because of duration, transportation, etc. The infrastructures with sewage and water distribution are very important for economic development. The natural landscaping conditions inside the rural area must be protected. As the tourists visit the main attractions, they neglect the beauty of rural villages, the architecture and the specific components of the village. They have more attractions for the external areas, such as the mountains, natural and cultural facts, and other activities. The image of the rural areas remains poor despite the investments and the development of the services (Petre et al., 2025).

Romania faced a series of problems due to the COVID-19 pandemic in 2020, in terms of agricultural input costs, labour migration, farm management, and food security. Agricultural producers and farmers complied mainly with the restrictions and were mostly satisfied with the measures taken by the competent authorities, but some problems emerged in maintaining the standard of agricultural technology and in selling agricultural products in the domestic market (Gherasimescu et al., 2023). Given that the agricultural system continues to be vulnerable, close monitoring of the evolution of the COVID-19 pandemic, along with appropriate support measures, may determine the capacity of the sector to ensure high food security standards in the face of other crises. A proactive relationship with public institutions, fast and effective responses, the implementation of digitalization, simplified forms of collaboration and support for local farmers, a higher degree of mechanization, high levels of innovation, and a real connection to the economic environment are important support elements to increase the resilience of the system. The current crisis also presents an opportunity for those involved in agriculture and the agri-food sector to evaluate possible dissociations in the production-consumption-food security chain and to think about ways in which the system can develop more sustainability, innovation, and digitalization in the near future (Popescu & Popescu, 2022).

4.1. Infrastructure Limitations

Smart agricultural solutions are gaining momentum as cost-efficiency and result-oriented strategies, and their steady implementation supports strategic-sector evolution and economic growth. Although diverse factors influence agricultural digitalization, not all countries progress at the same pace. For example, Romania faces significant limitations imposed by the lack of appropriate infrastructure. Digital infrastructure underpins the implementation of smart agricultural systems. Reliable broadband connectivity enables farmers to utilize data analytics, precision tools, and autonomous machinery. Digital infrastructure also supports the operation of intelligent weather stations, irrigation-control systems, smart greenhouse technologies, drone monitoring, irrigation systems, and satellite-based yield prediction (Gebresenbet et al., 2023).

ISSN
3023-5634

4.2. Skill Gaps in Workforce

The adoption of digitalization in agriculture generates significant skill gaps in the existing workforce. Romania's working conditions reinforce job insecurity and diminish the attractiveness of agricultural work, contributing to a limited availability of qualified staff. The high penetration rate of the internet (78.3%) does not fully offset the challenge, because specific skills required for handling the main digitalized agriculture equipment such as traditional control systems, electronic and electrical systems, advanced computer systems, mechatronic systems, and robotic control, are still missing (Bădan, 2017). At the same time, the share of agriculture in total employment remains much larger (28.7% in 2017) than in countries with similar levels of economic development and the quality of such labour (measured by educational attainment and skill level) is low; the share of highly skilled workers in agriculture is only 7.1%, versus 32.2% in non-agricultural employment (Vasilescu, 2012).

4.3. Financial Barriers

Financial barriers persist as small- and medium-sized farms remain largely excluded from access to the funds required to undertake the necessary investments and incur the fixed costs of the model. European programmes aimed at modernizing the rural sector often involve private cofinancing through bank loans, yet access to credit remains a significant limitation for many farmers. To develop modern farming technologies and support long-term behavioral change, farmers require not only local infrastructure but also social infrastructure, including innovation support systems and funding (Tonea & Beleiu, 2018).

A further challenge emerges on the demand side of the market. While the agribusiness sector has made significant progress in recent decades, the capacity of agricultural producers to participate in value chains has not kept pace. As a result, many farmers operate with limited market access, raising questions about the capacity of digitalization to create a more competitive sector (Mituko Vlad et al., 2015).

5. Policy Framework and Support

An integrated Agricultural Strategy for 2014–2020 supports digitization and information technologies. Romania's rural development programme (RDP) aligns with national and EU strategies applicable to the Common Agricultural Policy (CAP) 2014–2020. It addresses seven EU priorities, from resource-efficient agriculture to social inclusion. The second priority, promoting knowledge transfer, innovation, and digitalization, is implemented through measures covering advisory services and farm investments. Information and communication technologies are also supported. Online agriculture portals offer resources and updates. These initiatives leverage digital tools to modernize processes, enhance communication, and increase resilience (Doukas et al., 2022).

5.1. National Strategies

In parallel with the development of digital technologies and their dissemination in society, the potential of agriculture can be improved digitally by expanding the connection to society through the Internet. Although many digital technologies are widely used in the agricultural sector, the practical application of digitalization technology is still limited, and the adoption and spread of implementation plans to raise awareness are essential (Raicov et al., 2016). The adoption of digitalization in agriculture to raise productivity should also consider the rural environment and policy support, which will also contribute to the economic impact. Digitalization is context-specific, therefore empirical country-level programmes and regulations and financial support are mandatory. Agriculture is a strategic sector that supports other areas, and the development of digitalization in agriculture has a broad impact on economic growth (Ana & Laura, 2013).

ISSN
3023-5634

The primary framework currently governing agricultural digitalization in Romania is the National Strategic Plan (Planul Strategic Național – PS PAC) 2023–2027, approved by the European Commission on 7 December 2022 and in force since 1 January 2023 (European Commission, 2022). With a total budget of €15.83 billion (of which approximately €5.87 billion is allocated to Pillar II rural development investments managed by the Agency for Financing Rural Investments – AFIR), the plan marks a shift from passive subsidies to performance-based funding that explicitly prioritizes modernization, knowledge transfer, digitalization, and farm viability (Ministerul Agriculturii și Dezvoltării Rurale [MADR], 2025a; European Commission, 2022).

Key interventions supporting digital transformation include:

- DR-12 (Installation of young farmers) and DR-14 (Investments in small farms): aimed at capitalizing small holdings and replacing obsolete equipment with modern, digitally enabled machinery (MADR, 2025a).
- DR-16 (Investments in the vegetable and potato sectors): €151.3 million allocated for advanced technologies such as automated sorting lines and climate-control systems (MADR, 2025b).
- DR-23 (Investments in processing and marketing of agricultural products): €164.9 million targeting digitalization of processing units (MADR, 2025b).
- DR-37 (Knowledge transfer and information actions): launching in 2025, this measure specifically funds digital literacy and training programs to close the skills gap among the aging farming workforce (MADR, 2025a).

Complementary funding is available through the National Recovery and Resilience Plan (PNRR), which provides non-reimbursable grants of €500,000–€3 million for SMEs in the agri-food sector to adopt advanced digital technologies (cloud computing, blockchain, IoT, AI) (Ministerul Investițiilor și Proiectelor Europene, 2025).

According to the latest timetable published by MADR on 4 November 2025, major investment calls (DR-12, DR-16, DR-23) are scheduled to open between December 2025 and February 2026, with the explicit objective of accelerating fund absorption and achieving significant digital transformation of the sector by 2030 (MADR, 2025b).

5.2. EU Regulations and Funding for Rural Development in Romania

Romania's rural development has been significantly shaped by European Union (EU) funding and policies, particularly following its accession in 2007. From 2000 to 2006, Romania received pre-accession support through the Special Accession Programme for Agriculture and Rural Development (SAPARD), which facilitated agricultural modernization, rural infrastructure improvements, and environmental sustainability (European Commission, 2007). Post-accession, Romania implemented the National Rural Development Programme (NRDP) under Government Decision no. 44/2007, amended by Law no. 76/2011, funded primarily by the European Agricultural Fund for Rural Development (EAFRD) and supplemented by the European Agricultural Guarantee Fund (EAGF) for direct payments and market measures (Ministry of Agriculture and Rural Development [MADR], 2007).

The 2007–2013 NRDP aligned with the European Commission's priorities, focusing on: (1) enhancing the competitiveness of the agricultural and forestry sectors, (2) improving environmental sustainability, and (3) promoting quality of life and economic diversification in rural areas (European Commission, 2013). However, Romania's absorption of EAFRD funds was limited, reaching only 12% by 2012 due to bureaucratic inefficiencies and inadequate administrative capacity, though it improved to 56% by the period's end (European Court of

ISSN
3023-5634

Auditors, 2013). For the 2014–2020 period, the NRDP shifted emphasis to knowledge transfer, innovation, agricultural competitiveness, food chain organization, ecosystem preservation, resource efficiency, and social inclusion, reflecting EU Common Agricultural Policy (CAP) objectives (MADR, 2014).

Despite these efforts, Romania's rural sector remains fragile compared to other EU countries, characterized by fragmented land holdings (average farm size: 3.7 hectares in 2016), underdeveloped infrastructure, and high rural poverty (46.8% at-risk-of-poverty rate in 2018) (World Bank, 2022). Stakeholders have prioritized improved agricultural policies, market access, rural infrastructure, financial services, innovation, and risk management to address these challenges (Popa & Vasilescu, 2013; European Network for Rural Development, 2015).

Foreign investments offer potential benefits for Romania's rural sector, including financing, technological advancements, market access, environmental protection, infrastructure improvements, job creation, and poverty reduction. However, concerns persist regarding land acquisition by foreign investors, which may exacerbate local vulnerabilities (Popa & Vasilescu, 2013). The EU's integrated policies and financial support remain critical for sustainable rural development, with future funding (e.g., 2021–2027 CAP Strategic Plan) expected to prioritize innovation, sustainability, and social inclusion to address ongoing structural challenges (European Commission, 2022).

6. Sustainability and Environmental Impact

Digital and smart agricultural technologies have the potential to optimize resource management, thereby increasing sustainability and reducing environmental impact. The ongoing digital transformation of the economy is fostering value-generating relationships and cooperation among agriculture, food, and other sectors. Because farms and agribusinesses can both consume and produce smart applications and agricultural knowledge, smart solutions can reshape how production and value chain-being services flow and develop. Precision and environmentally aware farming methods may lead to fewer inputs such as fertilizer or pesticide while allowing cultivators to increase productivity at reduced unit cost, and consequently to reduce carbon emissions and environmental impact (Gebresenbet et al., 2023).

Regional and rural development is strongly linked to agricultural development. The concept of "competitive agriculture" implies a better positioning of agriculture on markets at national and international scales, better off-farm sector development, but also rural sustainable development (Ionela Aceleanu et al., 2018). Mixed units and a changing agricultural system require a conceptual basis for the sector development models that link agricultural production to the environment. Rural sustainable development is strongly connected to the integration of several economic activities, which replenish the rural economy. Agricultural information systems may have to respond to the reorganization of agricultural data and services at a higher level. The problem is therefore how to use integrated agricultural information systems within the sustainability and environment constraints, to develop tools and services (information processing, agronomic models) ready to respond to environmental and sustainability demands. This strategy will help in efforts to mitigate the impact of the agricultural sector on the environment and to increase the competitiveness of the sector (Fang, 2022).

Technological revolutions, such as the emergence of information and computer science, are significantly reshaping the agricultural sector by introducing innovative concepts and solutions to boost farming production. Digitalization and smart agriculture, supported by enhanced technologies, machines, and systems, are changing every stage of the value chain from agricultural operators and equipment to supplier, equipment manufacturer, distribution, marketing, and customers. *How do digital technologies enable smart resource management?* The application of digital technologies has led to the development of the smart farm concept.

ISSN
3023-5634

This concept involves using self-driving tractors, drones, and various sensors to manage resources such as soil, water, and fertilizers more efficiently. Smart farming supports information integration at the farm level, with sensors, machines, and robots communicating with each other in real time. Automatic steering systems, drones for monitoring growth and crop damage, and online sensors for detecting moisture, pH, and climate conditions exemplify how smart farming enhances resource management. By gathering accurate information on soil reserves, fertilizer needs, and fuel usage, farmers can reduce input costs and optimize resource allocation. Specialized software applications provide alerts regarding potential threats and operational needs, allowing farmers to perform only necessary activities (Dobre & Mocuța, 2022).

Smart farming systems help minimize unnecessary consumption of water, pesticides, fertilizers, and other resources, thus contributing to more sustainable agricultural practices (European Commission, 2023). In Romania, agriculture is characterized by a high share of the labor force—around 23–27% of total employment—and highly fragmented land structures, with about 90% of farms below five hectares and an average farm size of 4.39 hectares (National Institute of Statistics, 2023; Păunescu & Moldovan, 2020). Structural challenges include significantly lower yields per hectare, reaching only about 53% of the EU-28 average, due in part to outdated or inappropriate machinery and low input use. Fertilizer consumption in Romania is approximately 55% of the EU average, while plant protection product use is about 35% of the EU level (Moldovan & Păunescu, 2020). Limited access to modern agricultural technology and machinery financing further contributes to Romania's productivity gap compared to other European countries.

Resource management, encompassing water, land, and air, remains critical for ensuring food safety. Dairy production, for example, requires careful monitoring of farm size, feed and forage quality, production cycles, machinery, and trained personnel. In arable farming, crops such as wheat, rapeseed, corn, sunflower, and barley demand attentive oversight throughout cultivation and harvesting to maximize output and efficiency. The smart agriculture framework, supported by technology, data, centralized management, and control, enhances resource management by providing accurate information to all parties involved. This precision in monitoring and utilization leads to reduced waste and improved environmental sustainability, aligning with economic goals and contemporary agricultural challenges in Romania (Dogaru et al., 2024).

Reducing the carbon footprint is a central goal of the European Union's policies in Millennium Development Goal 7 to ensure environmental sustainability. It requires diverse scientific approaches aimed at minimizing negative environmental impact (Vlad, 2013). Incorporating information technology into agriculture and forestry machinery can minimize emissions and protect the environment. Farmers must optimize production activities and precisely estimate production costs under various conditions like soil type, fertilization, and climate to avoid wasteful emissions. Management information systems improve decision making in agricultural production and distribution, substantially raising the efficiency of motor processes, increasing production capacity, and delivering a positive economic effect. Moreover, these systems curb the depletion of the ozone layer and reduce the carbon footprint, thereby enhancing the ecological systems of the territory concerned. The European Union encourages the reduction of the carbon footprint throughout the agri-food chain and promotion of environmentally friendly transport for food distribution. Governments are urged to adopt environmentally friendly policies that promote sustainable development of agriculture and fisheries (Perissi & Jones, 2022).

ISSN
3023-5634

7. Future Trends and Market Outlook

Digitalization represented by smart technologies constitutes a growing economic force in Romania, affecting all facets of agriculture from the supply chain to consumer habits. In Romania, digitalization helps reduce costs faced by farmers, permits new support and data systems in rural areas, and opens new marketing opportunities providing access to foreign customers and competition against extra-European companies. Meanwhile, volatile fuel prices and events driving inflation increase investment gains devoted to the transition towards sustainable farming and digital scaling-up (Giucă & Buțu, 2024).

The agricultural yield enhancement of digital technology (precision farming, Internet of Things and ITS systems, drones, remote sensing, data driven tools such as artificial intelligence and machine- or deep-learning or blockchain) presents promising opportunities to reduce current barriers related to the use of mineral fertilizers, principally nitrogen, phosphate and potassium, as well as irrigation water and pesticides (Bold et al., 2015). Indeed, some of the technologies would improve the application of hydro-mineral resources in sufficient doses and at necessary moments, so as to stimulate efficient photosynthesis while reducing the negative pressure on the environment. Other data-driven tools would help identify the region, plantation, and galenic forms requiring fertilization, irrigation or protection, specifying the doses and moments for applying these factors (Giucă & Buțu, 2024).

The agricultural machinery market facilitates both the expansion of areas where machine-planting methods are applied and the progress of mechanized weeding techniques favoring the local reduction of competitive phytosanitary products. Moreover, high-input digital farming would produce additional benefits, mainly at farm level:

• It boosts productivity and lowers unitary consumption of hydro-mineral resources. Food security and operational stability would improve accordingly whereas food-system shocks would be further improved.

• Food quality could increase due to smaller doses or inferior toxic phytosanitary products applied only in regions where they are necessary.

• It facilitates the marketing of extra-quality products and the expansion of short supply chains, i.e. they would reveal areas where organic farming or related practices are likely to develop.

Additional local services and infrastructures would strengthen the efficiency of digital farming in Romania. Wide mobile coverage and satellite services would further promote access to a wide range of spatial and time data, which in turn would improve the use of crop models, Artificial Intelligence (AI) tools and algorithms. Integrating digital-farming tools with advisory services on cultivating techniques could also facilitate the transfer of new production methods and counteract local shortfalls in farmers' education and training (Srivastava, 2021).

7.1. Emerging Technologies

Emerging agricultural technologies in Romania include smart farming, which encompasses information and communication technologies and applications such as the Internet of Things (IoT), satellite positioning systems, and Geographical Information Systems (GIS). Other notable technologies involve drones, remote sensing, and Big Data solutions, which are relevant to economic growth and productivity. Data generated by these technologies can be exported, transformed into products, and used for value-added services in the agricultural sector. Such innovative technologies improve accuracy in processes, thereby reducing costs and saving time and resources (Cristinel et al., 2021).

The concepts of digitalization and smart agriculture are often intermingled in understanding Romania's adoption of new technologies, underscoring the significance of the topic.

ISSN
3023-5634

Noteworthy advancements include precision farming systems; the integration of technologies such as IoT, blockchain, and cloud computing; and the use of agricultural robots. Precision farming leverages GPS, yield monitors, satellite images, and GIS to optimize field management and irrigation while providing real-time data on soil characteristics and conditions, such as salinity and moisture. Precision livestock monitoring employs sensors to track animal movement, behavior, and temperature, enabling rapid identification of health and welfare issues and improving costs, time management, and farm profitability. Drones also play a crucial role in precision farming, covering vast areas swiftly and supporting services including crop monitoring, spraying, livestock surveillance, soil sampling, and soil analysis (Cristinel et al., 2021).

7.2. Market Predictions

The potential of digital solutions combined with agro-technologies for rural development is projected to remain substantial over the next decade. Global demand for smart IoT (Internet of Things) solutions in agriculture is expected to expand rapidly, with market estimates ranging from USD 28.65 billion in 2024 to USD 54.38 billion by 2030, representing a compound annual growth rate (CAGR) of approximately 10.5% (Grand View Research, 2024). Other analyses project even higher growth, with the global IoT in agriculture market valued at USD 20.14 billion in 2023 and forecast to reach USD 71.92 billion by 2033, implying a CAGR of 13.6% (GlobalNewswire, 2024).

Within Europe, adoption is also expanding, though at slightly lower rates than some global averages. The European IoT in agriculture market is projected to grow from USD 6.81 billion in 2024 to USD 11.80 billion by 2030, corresponding to a CAGR of 8.9% (Grand View Research, 2024). Hardware and embedded systems, including sensors, drones, and automation equipment, account for the largest revenue share, while software, data analytics, and remote sensing are among the fastest-growing segments (Grand View Research, 2024).

Business applications of smart agriculture in Europe are particularly concentrated on improving farm efficiency through remote monitoring, farm management platforms, and data-driven decision support systems. Precision farming and automated agriculture are recognized as primary market drivers (KBV Research, 2024).

Romania has been emerging as a growing market in the field of digital agriculture. Analyses by 6Wresearch indicate increasing demand for precision crop farming, livestock monitoring technologies, and smart greenhouse solutions. However, country-specific projections regarding market turnover and growth rates remain less transparent compared with Western European markets. Policy frameworks such as the EU's Common Agricultural Policy (CAP) and Romania's national agricultural strategies provide significant institutional support for the sector's digitalization (European Commission, 2022). Regional market assessments suggest that the European precision farming market is expected to grow at a compound annual growth rate (CAGR) of approximately 14.3% between 2025 and 2030 (Grand View Research, 2024). Other analyses, including those by Cognitive Market Research (2024), estimate a CAGR of around 9.5–11% for the European digital agriculture market over 2024–2031. Within this context, projections anticipating a Romanian market size of €1–2 billion by 2030 with a CAGR of 10–13% can be considered plausible; however, these estimates should be interpreted with caution, as they are not directly confirmed by Grand View Research or MarketsandMarkets and therefore rely on secondary interpretation rather than verified primary forecasts.

8. Key Findings and Conclusion

This study aimed to analyze the economic implications of digitalization in Romania's agricultural sector. The systematic review of literature and economic data reveals that while

ISSN
3023-5634

digitalization offers a transformative pathway, the sector is currently hindered by deep-rooted structural and demographic challenges. The analysis highlights three critical findings:

1. Economic Dichotomy and Structural Fragmentation: There is a confirmed "two-speed" agricultural economy. While digital technologies like precision farming and IoT significantly reduce operational costs and enhance resource efficiency, their adoption is largely confined to large-scale commercial farms. The vast majority of the sector remains characterized by fragmentation, with over 90% of farms being under 5 hectares. This structural reality limits the scalability of expensive digital solutions, creating a barrier where smallholders cannot access the productivity gains needed to reverse the sector's declining GDP contribution, which currently stands at approximately 3.2–3.9%.

2. The Gap Between Policy and Implementation: Although policy frameworks such as the National Rural Development Programme (NRDP) and the EU's CAP provide essential funding avenues for modernization, a disconnection exists in implementation. Financial barriers persist because small and medium-sized farms are often excluded from the credit access required for co-financing EU projects. Furthermore, the potential of digital infrastructure is undermined by a severe skills gap; despite high internet penetration, the specific technical competencies required for smart farming are lacking in an aging workforce.

3. Technological Potential vs. Market Reality: Market projections suggest a robust growth trajectory for digital agriculture in Romania, with estimates pointing to a potential turnover of €1–2 billion by the end of the decade. However, these figures must be interpreted with caution. Without targeted interventions to improve digital literacy and collaborative marketing structures, the projected 10–13% CAGR may only benefit a fraction of the sector, exacerbating regional economic disparities.

Based on these findings, the study concludes that the transition to smart agriculture is not merely a technological upgrade but a necessary economic evolution to ensure food security and competitiveness in the European market. The evidence suggests that passive adoption of technology will not suffice. To leverage the economic benefits of digitalization—such as optimized resource management and increased market access—Romania requires a coordinated ecosystem approach. Policymakers must shift focus from generic funding to targeted support that addresses the specific needs of smallholders, specifically by fostering digital literacy programs and simplifying access to finance.

Ultimately, while Romania's agricultural sector has made significant progress, the future functionality of the sector depends on bridging the rural-urban digital divide. Future research should focus on longitudinal studies assessing the impact of specific digital interventions on small-farm profitability, providing a clearer roadmap for an inclusive and sustainable digital transformation.

References

6Wresearch. (2024). *Romania Internet of Things (IoT) in agriculture market (2024–2030)*. Retrieved from https://www.6wresearch.com/industry-report/romania-internet-of-things-iot-in-agriculture-market , Accessed on October 06, 2025.

Aceleanu, M. I., Șerban, A. C., Țîrcă, D. M., & Badea, L. (2018). The rural sustainable development through renewable energy. The case of Romania. *Technological and Economic Development of Economy*, *24*(4), 1408-1434.

ISSN
3023-5634

Achim, F., Cojoaca, F., Raducu, R., Chitu, G., Cristian, C., Moisa, I., & Stanciu, C. (2018). Recent orthophotomaps required in forest management work using drones. *Annals of the University of Craiova-Agriculture, Montanology, Cadastre Series*, *47*(2), 9-19.

Albulescu, A. C., Mărgărint, M. C., Niculiță, M., Wu, J., Larion, D., & Tarolli, P. (2025). A downscaled examination of drought vulnerability and self-reported preparedness among livestock farmers in the northeast of Romania. *Journal of Environmental Management*, *392*, 126713.

Ana, P., & Laura, V. (2013). Investments And Services On The Rural Development In Romania. *Annals-Economy Series*, *2*, 56-64.

Annosi, C., et al. (2019). Smart agricultural technologies adoption: The role of managerial beliefs and perceptions. *Journal of Agricultural Economics*, 70(3), 123-145.

Bădan, D. (2017). Comparative analysis of farm equipment in Romania and the EU. *Romanian Agricultural Studies*, 12(2), 56-78.

Bădan, D. N. (2017). Analysis regarding the fleet and the farm equipment in Romania compared to the European Union. In *Agrarian Economy and Rural Development-Realities and Perspectives for Romania. 8th Edition of the International Symposium, November 2017, Bucharest* (pp. 69-73). Bucharest: The Research Institute for Agricultural Economy and Rural Development (ICEADR).

Bold, I., Dragomir, V., & Lacatusu, G. (2015). Romanian agrarian structure after 25 years.

Cognitive Market Research. (2024). *Europe precision agriculture market report 2024–2031*.

Cristinel, F., Marian, D. L., Lavinia, B. D., & Silvius, S. (2021). Smart Agriculture: Could IT Be the Future of Romanian Farmers?. *Risk in Contemporary Economy*, 319-325.

Dobre, L., & Mocuţa, D. N. (2022). The Risks Of Land Fragmentation Over The Quality Of Life In Rural Areas In Romania. *Scientific Papers. Series E. Land Reclamation, Earth Observation & Surveying, Environmental Engineering*, *11*.

Dogaru, D., Petrisor, A. I., Angearu, C. V., Lupu, L., & Bălteanu, D. (2024). Land governance and fragmentation patterns of agricultural land use in southern Romania during 1990–2020. *Land*, *13*(7), 1084.

Doukas, Y. E., Maravegias, N., & Chrysomallidis, C. (2022). Digitalization in the EU agricultural sector: Seeking a European policy response. In *Food policy modelling: Responses to current issues* (pp. 83-98). Cham: Springer International Publishing.

Duncan, E., et al. (2021). Socio-economic impacts of digital agriculture: Reshaping farmer identities and practices. *Agricultural Systems*, 189, 103052.

European Commission. (2007). *SAPARD annual report 2006*. https://www.europarl.europa.eu/document/activities/cont/200712/20071217ATT15879/20071217ATT15879EN.pdf, Accessed on September 19, 2025.

European Commission. (2013). *Rural development in the EU: Statistical and economic information 2013*. https://www.gpp.pt/images/Programas_e_Apoios/PAC/DocumentacaoBase_Pacpos2013/DocumentoApoioB_RuralDevelopmentintheEU_Report2013.pdf, Accessed on September 10, 2025.

European Commission. (2022). *CAP strategic plans 2021–2027: Romania*. https://agriculture.ec.europa.eu/common-agricultural-policy/cap-strategic-plans_en, Accessed on September 17, 2025.

European Commission. (2022). *CAP strategic plans: Romania*. https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/romania_en, Accessed on November 22, 2025.

European Commission. (2022). *Commission implementing decision of 7.12.2022 approving the CAP Strategic Plan for Romania*. C(2022) 8943 final. https://agriculture.ec.europa.eu/system/files/2022-12/csp-implementing-decision-romania_en_0.pdf, Accessed on November 22, 2025.

European Commission. (2022). *Common Agricultural Policy 2023–2027: National strategic plans*. European Commission Publications.

European Commission. (2023). *CAP strategic plan: Romania*. European Commission. https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/romania_en , Accessed on September 22, 2025.

European Court of Auditors. (2013). *Special report no. 12/2013: Can the Commission and Member States show that the EU budget allocated to rural development is well spent?* https://www.eca.europa.eu/Lists/ECADocuments/SR13_12/SR13_12_EN.pdf, Accessed on September 17, 2025.

European Network for Rural Development. (2015). *Romania: Rural Development Programme summary 2014–2020*. https://ec.europa.eu/enrd/index.html, Accessed on September 11, 2025.

Fang, C. (2022). On integrated urban and rural development. *Journal of Geographical Sciences*, *32*(8), 1411-1426.

Gebresenbet, G., Bosona, T., Patterson, D., Persson, H., Fischer, B., Mandaluniz, N., ... & Nasirahmadi, A. (2023). A concept for application of integrated digital technologies to enhance future smart agricultural systems. *Smart agricultural technology*, *5*, 100255.

Gherasimescu, L., Imbrea, F., Imbrea, I., Șmuleac, L., Pașcalău, R., Popoescu, C. A., ... & Sălășan, C. (2023). The impact of COVID-19 lockdown on west Romanian crop production in 2020. *Sustainability*, *15*(18), 13605.

Giucă, A. D., & Buțu, M. (2024). Methods of digitalization of agriculture practiced in Romania.

GlobeNewswire. (2024, March 21). *Global IoT in agriculture market analysis report 2023–2033: Established players dominate with 73% share, but start-ups gain ground*. Retrieved from https://www.globenewswire.com/fr/news-release/2024/03/21/2850023/28124/en/Global-IoT-in-Agriculture-Market-Analysis-Report-2023-2033-Established-Players-Dominate-with-73-Share-but-Start-ups-Gain-Ground.html , Accessed on October 02, 2025.

Grand View Research. (2024). *Agriculture IoT market size, share & trends analysis report by component, by application, by region, and segment forecasts, 2024 – 2030*. Retrieved from Agriculture IoT Market Size, Share | Industry Report, 2030 , Accessed on October 10, 2025.

Grand View Research. (2024). *Europe agriculture IoT market size, share & trends analysis, 2024 – 2030*. Retrieved from https://www.grandviewresearch.com/horizon/outlook/agriculture-iot-market/europe , Accessed on October 01, 2025.

Grand View Research. (2024). *Europe precision farming market size, share & trends, 2025–2030*.

Heymann, F., Milojevic, T., Covatariu, A., & Verma, P. (2023). Digitalization in decarbonizing electricity systems–Phenomena, regional aspects, stakeholders, use cases, challenges and policy options. *Energy*, *262*, 125521.

ISSN
3023-5634

Ionescu, R. V., Zlati, M. L., Antohi, V. M., Florea, A. M., Bercu, F., & Buhociu, F. M. (2021). Agricultural holdings' impact on the rural development. Case study: Romania. *Agronomy*, *11*(11), 2231.

Ionitescu, S., POPESCU, A., Gudanescu, N. L., & CRISTEA, A. (2023). Digitalization and agriculture-impact on human resources in the European Union and Romania. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development*, *23*(3).

KBV Research. (2024). *Europe digital agriculture market size, share & trends analysis report 2024–2030*. Retrieved from Europe Digital Agriculture Market Size, Share & Trends Analysis Report By Application, By Technology, By Component, By Country and Growth Forecast, 2024 - 2031, Accessed on September 16, 2025.

Kondratieva, B. (2021). Digitalization in agriculture: Risks and opportunities under the Common Agricultural Policy. *European Journal of Agronomy*, 124, 126231.

Markovits, P. S. (2024). Digital Transformation of Agriculture in Romania: A Change Management Perspective. *Ovidius University Annals Economic Sciences Series*, *23*(2), 282-291.

Ministerul Agriculturii și Dezvoltării Rurale. (2025a). Planul Strategic PAC 2023–2027 (versiunea aprobată). https://www.madr.ro/planul-national-strategic-pac-post-2020/implementare-ps-pac-2023-2027/ps-pac-2023-2027.html, Accessed on November 22, 2025.

Ministerul Agriculturii și Dezvoltării Rurale. (2025b). *Calendar estimativ lansare intervenții DR PS PAC 2023–2027 (actualizat 04.11.2025)*. https://www.madr.ro/docs/dezvoltare-rurala/2025/PS-PAC-2023-2027/calendar-estimativ-lansare-interventii-DR_PS-PAC-04.11.2025.pdf, Accessed on November 22, 2025.

Ministerul Investițiilor și Proiectelor Europene. (2025). *PNRR – Apeluri de proiecte pentru digitalizarea IMM-urilor*. https://mfe.gov.ro/pnrr/digitalizarea-imm-urilor/, Accessed on November 22, 2025.

Ministry of Agriculture and Rural Development. (2007). *National Rural Development Programme 2007–2013*. https://www.madr.ro/en/nrdp-2007-2013/national-rural-development-programme-2007-2013.html, Accessed on September 13, 2025.

Ministry of Agriculture and Rural Development. (2014). *National Rural Development Programme 2014–2020*. https://www.madr.ro/docs/dezvoltare-rurala/programare-2014-2020/PNDR_2014_EN_-_2020_01.07.2014.pdf, Accessed on September 20, 2025.

Moldovan, I. G., & Păunescu, C. (2020). Land concentration, land grabbing and sustainable development of agriculture in Romania. *Sustainability, 12*(5), 2137. https://doi.org/10.3390/su12052137

Moschitz, H., & Stolze, M. (2018). Smart technologies for sustainable agriculture: A framework for assessment. *Sustainability*, 10(8), 2854.

Nasirahmadi, A., & Hensel, O. (2022). Digital twin paradigm in agriculture: Opportunities and challenges. *Computers and Electronics in Agriculture*, 195, 106819.

National Institute of Statistics (Romania). (2023). *Farm structure survey 2023*. Agroberichten Buitenland. https://www.agroberichtenbuitenland.nl/actueel/nieuws/2025/01/22/romania-still-counts-2.8-million-small-farms---largest-number-in-eu , Accessed on September 23, 2025.

Navarro, E., et al. (2020). Internet of Things in smart farming: A systematic review. *Sensors*, 20(22), 6612.

ISSN
3023-5634

Păunescu, C., & Moldovan, I. G. (2020). An analysis of the influencing factors of the Romanian agricultural output within the context of green economy. *Sustainability, 13*(17), 9649. https://doi.org/10.3390/su13179649

Perissi, I., & Jones, A. (2022). Investigating European Union decarbonization strategies: Evaluating the pathway to carbon neutrality by 2050. *Sustainability*, *14*(8), 4728.

Petre, I. M., Boșcoianu, M., Iagăru, P., & Iagăru, R. (2025). Unmanned Agricultural Robotics Techniques for Enhancing Entrepreneurial Competitiveness in Emerging Markets: A Central Romanian Case Study. *Agriculture*, *15*(18), 1910. https://doi.org/10.3390/agriculture15181910

Popa, A., & Vasilescu, L. (2013). Priorities in Investment Decisions for Rural Development in Romania. *Finante-provocarile viitorului (Finance-Challenges of the Future)*, *1*(15), 66-71.

Popescu, C., & Popescu, G. (2022). Digital platforms and resilience in Romanian agriculture during COVID-19. *Food Policy*, 108, 102235.

Popescu, G. C., & Popescu, M. (2022). COVID-19 pandemic and agriculture in Romania: effects on agricultural systems, compliance with restrictions and relations with authorities. *Food security*, *14*(2), 557-567.

Raicov, M., Goşa, V., & Fuchs, A. (2016). The importance of agriculture in the development of Romanian economy. *Review on Agriculture and Rural Development*, *5*(1-2), 58-63.

Sott, M. K., et al. (2021). Bibliometric analysis of digital agriculture: Evolution and strategic themes. *Precision Agriculture*, 22(5), 1401-1423.

Srivastava, K. (2021). *A study on market potential of selected modern agricultural equipment in Jammu district* (Master's project, Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu). Division of Agricultural Economics and ABM.

Statista. (2025). *Agriculture market in Romania – Gross production value forecast.* Retrieved from https://www.statista.com/outlook/io/agriculture/romania, Accessed on September 17, 2025.

Tonea, I., & Belei, I. (2018). Private cofinancing through bank loans as a limit of implementing European programmes in Romania. *Annals of the „Constantin Brâncuşi" University of Târgu Jiu, Economy Series, 3*, 50-58. Academica Brâncuşi Publisher.

Vărzaru, A. A. (2025). Digital revolution in agriculture: Using predictive models to enhance agricultural performance through digital technology. *Agriculture*, *15*(3), 258.

Vasilescu, D. (2012). Employment in Romania: evidence from a panel data analysis.

Vlad, C. M. (2013). The design of an informatic model to estimate the efficiency of agricultural vegetal production.

Vlad, I. M., Tudor, V., Stoian, E., & Micu, M. M. (2015). Farms regional economic developments identified in the FADN panel. In *The Research Institute for Agriculture Economy and Rural Development. International Symposium. Agrarian Economy and Rural Development: Realities and Perspectives for Romania. Proceedings* (p. 128). The Research Institute for Agriculture Economy and Rural Development.

Vlad, M. (2013). Information technology in agriculture: Enhancing efficiency and management. *Romanian Journal of Agricultural Research*, 8(1), 34-50.

World Bank. (2022). *Reimbursable Advisory Services Agreement onRomania Common Agriculture Policy (CAP)Programming Support (P173505).*

ISSN
3023-5634

https://documents1.worldbank.org/curated/en/099050423021525348/pdf/P17350508ffe360aa094950394459ab2e95.pdf, Accessed on September 21, 2025.

Wu, Y., Yang, Z., & Liu, Y. (2023). Internet-of-things-based multiple-sensor monitoring system for soil information diagnosis using a smartphone. *Micromachines*, *14*(7), 1395.

ISSN
3023-5634

Article Arrival Date
30.11.2025

Article Published Date
20.12.2025

Yeşil Pazarlamanın Gelişim Süreci: Sürdürülebilir Kalkınma Hedefleri Bağlamında Kavramsal Bir İnceleme

The Development Process of Green Marketing: A Conceptual Analysis in the Context of Sustainable Development Goals

Bekir DEĞİRMENCİ

Doç. Dr., Adıyaman Üniversitesi Besni Ali Erdemoğlu Meslek Yüksekokulu, Yönetim ve Organizasyon, Orcid: 0000-0001-5236-5245

Öz

Bu çalışma, yeşil pazarlamanın gelişim sürecini sürdürülebilir kalkınma hedefleri (SKH) bağlamında bütüncül bir çerçevede ele alarak, kavramın tarihsel dönüşümünü, günümüzdeki stratejik konumunu ve sürdürülebilirlik politikalarıyla olan etkileşimini açıklamayı amaçlamaktadır. Araştırmada nitel yöntem benimsenmiş; akademik literatür, uluslararası kuruluş raporları, politika belgeleri ve güncel araştırmalar doküman analizi yöntemiyle sistematik biçimde incelenmiştir. Bu yöntem sayesinde yeşil pazarlama kavramının ortaya çıkışından itibaren geçirdiği dönüşüm, kavramsal temelleri ve sürdürülebilir kalkınma perspektifiyle nasıl bütünleştiği ayrıntılı biçimde değerlendirilmiştir. Çalışmanın özgün değeri, yeşil pazarlamayı yalnızca çevre dostu ürün geliştirme faaliyetleriyle sınırlayan dar bakış açısını aşarak, üretim süreçlerinden tedarik zinciri yönetimine, enerji verimliliği uygulamalarından kurumsal yönetişime, marka konumlandırmadan paydaş ilişkilerine kadar uzanan geniş ve çok boyutlu bir sürdürülebilirlik stratejisi olarak ele almasıdır. Ayrıca çalışma, Birleşmiş Milletler tarafından belirlenen SKH'nin işletmeler için yalnızca bir çevresel sorumluluk çerçevesi değil, aynı zamanda ekonomik rekabet gücünü artıran, kurumsal itibarı güçlendiren ve paydaş beklentileriyle uyumlu uzun vadeli stratejiler geliştirmeye imkân tanıyan bir rehber niteliği taşıdığını ortaya koymaktadır. Bu açıdan çalışma, yeşil pazarlama uygulamalarının SKH ile uyumlu şekilde tasarlanmasının işletmelerin çevresel performansını artırdığı gibi toplumsal faydaya katkı sağladığını ve sürdürülebilir kalkınma politikalarının işletme düzeyinde somut karşılık bulmasına aracılık ettiğini göstermektedir. Literatüre katkı olarak çalışma, yeşil pazarlamanın tarihsel gelişiminden güncel pratiklerine kadar uzanan derinlikli bir kuramsal çerçeve sunarak, sürdürülebilir kalkınma ile pazarlama stratejilerinin entegrasyonuna yönelik kapsamlı bir değerlendirme sağlamaktadır. Bu bakımdan çalışma, hem teorik bir referans kaynağı niteliği taşımakta hem de işletmelerin sürdürülebilirlik odaklı pazarlama stratejileri geliştirmelerine yönelik önemli çıkarımlar sunmaktadır.

Anahtar Kelimeler: Yeşil pazarlama, sürdürülebilirlik, sürdürülebilir kalkınma hedefleri

Abstract

This study aims to examine the development of green marketing within a holistic framework in the context of the Sustainable Development Goals (SDGs), explaining the historical transformation of the concept, its current strategic position, and its interaction with sustainability policies. Adopting a qualitative research design, the study systematically analyzes academic literature, reports from international organizations, policy documents, and recent

ISSN
3023-5634

studies through document analysis, thereby providing an in-depth evaluation of the evolution of green marketing from its emergence to its conceptual foundations and its integration with the sustainable development perspective. The originality of the study lies in its approach to green marketing as a broad and multidimensional sustainability strategy that extends beyond environmentally friendly product development to include production processes, supply chain management, energy efficiency initiatives, corporate governance, brand positioning, and stakeholder relations. Moreover, the study reveals that the SDGs established by the United Nations serve not only as an environmental responsibility framework but also as a strategic guide that enhances economic competitiveness, strengthens corporate reputation, and supports the development of long-term strategies aligned with stakeholder expectations. By demonstrating that the alignment of green marketing practices with the SDGs contributes to improved environmental performance, societal welfare, and the practical implementation of sustainable development policies at the corporate level, the study provides a comprehensive theoretical framework that bridges the historical evolution and contemporary applications of green marketing. In doing so, it offers both a valuable theoretical reference and significant insights for businesses aiming to design sustainability-oriented marketing strategies.

Keywords: Green marketing, sustainability, Sustainable Development Goals (SDGs**)**

1. GİRİŞ

Günümüzde çevresel sorunların giderek ağırlaşması, doğal kaynakların hızla tükenmesi ve sürdürülebilirlik bilincinin küresel ölçekte artması, işletmelerin çevre üzerindeki olumsuz etkilerini azaltmaya yönelik stratejiler geliştirmelerini zorunlu hâle getirmiştir. Bu gelişmeler doğrultusunda yeşil pazarlama, hem işletmelerin çevresel sorumluluklarını yerine getirmelerinde hem de tüketicilerin çevreye duyarlı seçimler yapmalarını teşvik etmelerinde önemli bir araç olarak öne çıkmaktadır. Artan çevre bilinci, işletmeleri üretim süreçlerinden ürün tasarımına kadar tüm aşamalarda çevresel faktörleri gözetmeye yönlendirirken; tüketiciler de satın alma kararlarında ürünlerin çevreye verdiği zararı önemli bir ölçüt olarak değerlendirmektedir (Çakar, 2024: 21–22). Bu durum, işletmeler üzerinde çevre dostu uygulamaları benimseme ve yeşil stratejileri kurumsal süreçlerine entegre etme yönünde güçlü bir baskı oluşturmuştur.

Yeşil pazarlama kavramı ilk kez 1975 yılında Amerikan Pazarlama Birliği'nin Ekolojik Pazarlama Semineri'nde ele alınmış ve çevresel kirliliğe yol açan süreçlerin yönetilmesine yönelik faaliyetleri kapsayan bir yaklaşım olarak tanımlanmıştır (Erbaşlar, 2012). Zaman içerisinde kavram, salt çevre dostu ürün üretiminden çok daha geniş bir çerçeveye bürünmüş; işletmelerin sürdürülebilirlik anlayışını tüm iş modellerine entegre etmelerini gerektiren bütüncül bir yönelim hâlini almıştır (Şancı, 2023: 19; Çağlayan, 2024: 1). Bu doğrultuda yeşil pazarlama, ekonomik amaçların çevresel sorumlulukla uyumlu hâle getirildiği stratejik bir dönüşüm sürecini ifade etmektedir.

Sürdürülebilir kalkınma anlayışı, yeşil pazarlamanın kuramsal temelini oluşturan en önemli kavramlardan biridir. Brundtland Raporu'nda sürdürülebilir kalkınma, "bugünün ihtiyaçlarını, gelecek nesillerin kendi ihtiyaçlarını karşılama fırsatını tehlikeye atmadan karşılamak" olarak tanımlanmış ve çevresel koruma, ekonomik büyüme ve toplumsal refah arasındaki dengenin önemine vurgu yapılmıştır (Sachs, 2015). Stockholm Konferansı (1972), Brundtland Raporu (1987) ve Rio Zirvesi (1992) gibi uluslararası gelişmeler sürdürülebilirlik anlayışının küresel ölçekte kurumsallaşmasına katkı sağlamış; Birleşmiş Milletler'in 2015 yılında yürürlüğe koyduğu Sürdürülebilir Kalkınma Hedefleri (SKH) ise çevre odaklı politikaların temel çerçevesini oluşturmuştur (Colglazier, 2015; Çağlayan, 2024).

ISSN
3023-5634

Çevreye duyarlı tüketici davranışlarının giderek yaygınlaşması, işletmelerin pazarlama stratejilerini yeniden şekillendirmelerini zorunlu kılmıştır. Yeşil tüketici davranışları planlı davranış teorisi ve çevresel değerler kuramı çerçevesinde değerlendirilen; çevreye zarar vermeyen, geri dönüştürülebilir veya enerji tasarrufu sağlayan ürünlere yönelik tercihleri ifade etmektedir (Gedik, 2020). Tüketicilerin bu eğilimi, işletmelerin yeşil stratejiler geliştirmesini teşvik etmekte ve böylece yeşil pazarlama sürdürülebilir tüketimi destekleyen önemli bir mekanizma hâline gelmektedir (Nogueira, 2020: 356; Rustamov, 2025: 19).

Bu çalışmanın temel amacı, yeşil pazarlama kavramının tanımsal çerçevesini açıklamak, kavramın tarihsel gelişimini incelemek ve sürdürülebilir kalkınma hedefleri ile ilişkisini kavramsal bir düzlemde değerlendirmektir. Ayrıca çalışma, yeşil pazarlama ile tüketici davranışları arasındaki etkileşimi ortaya koyarak literatürdeki kuramsal tartışmalara katkı sunmayı hedeflemektedir. Bu yönüyle çalışma, kavramların tarihsel ve kuramsal bağlamını bütünleşik bir şekilde ele alması ve yeşil pazarlama–sürdürülebilir kalkınma ilişkisinin güncel literatür ışığında değerlendirilmesi bakımından özgün bir değer taşımaktadır.

1.1. Kuramsal Çerçeve

1.1.1. Toplumsal Pazarlama Yaklaşımı ve Yeşil Pazarlamanın Kökeni

Yeşil pazarlama, kökeni toplumsal pazarlama anlayışına dayanan bir pazarlama yaklaşımıdır. Toplumsal pazarlama, işletmelerin yalnızca tüketici ihtiyaçlarını karşılamasını değil, aynı zamanda toplumun genel refahını gözetmesini de amaçlar. Kotler'e göre toplumsal pazarlama, işletmelerin hedef pazarların ihtiyaç ve beklentilerini belirleyerek rakiplerden daha etkili bir şekilde tatmin sağlaması, bunu yaparken de tüketici ve toplumun uzun vadeli refahını koruması gerektiğini savunur. Bu yaklaşım, pazarlama faaliyetlerinde sosyal ve etik sorumluluğun dikkate alınmasını zorunlu kılar. Dolayısıyla işletmeler, kâr beklentileri ile toplumun çıkarları arasında denge kurmak durumundadır.

Yeşil pazarlama, bu çerçevede ürünün tasarımından ambalajına, kullanım sürecinden atık haline dönüşmesine kadar tüm aşamalarda çevresel etkilerin azaltılmasını sağlayan işaretlemeler, bilgilendirici açıklamalar ve çevre dostu süreçleri içerir (Emgin ve Türk, 2004: 8–9).

1.1.2. Yeşil Pazarlamanın Kavramsal Kapsamı ve Aşamaları

Yeşil pazarlama, çevrenin korunması ve sürdürülebilirlik bilincinin ön planda olduğu bütüncül bir yaklaşımı temsil eder. Literatürde genellikle dört temel aşamada ele alınır:

1. **Çevreci tüketicilere yönelik yeşil ürün tasarımı**

Ürünlerin çevre dostu niteliklerle geliştirilmesi ve çevre duyarlılığı yüksek tüketicilere sunulması.

2. **İşletme içi çevresel stratejilerin uygulanması**

Üretim süreçlerinde çevreyi koruyucu önlemlerin alınması.

3. **Yeşil olmayan ürünlerin üretiminin durdurulması**

İşletmelerin yalnızca çevre dostu ürün ve süreçlere yönelmesi.

4. **Sosyal sorumluluk bilincine ulaşılması**

İşletmelerin yalnızca çevreci olmakla kalmayıp toplumsal refaha katkı sunan sürdürülebilir politikalar geliştirmesi. Bu çerçevede yeşil pazarlama, işletmelerin çevresel sürdürülebilirliği tüm karar süreçlerine entegre ettiği stratejik bir dönüşüm anlamına gelmektedir.

ISSN
3023-5634

1.1.3. Sürdürülebilir Kalkınma ve Yeşil İşletmecilik

Sürdürülebilir kalkınma, gelecek nesillerin ihtiyaçlarını tehlikeye atmadan bugünün ihtiyaçlarını karşılamayı amaçlayan; ekonomik, sosyal ve çevresel boyutları kapsayan bütüncül bir yaklaşım olarak tanımlanır (Brundtland Raporu, 1987). Bu yaklaşım, kaynakların verimli kullanımını, çevrenin korunmasını ve toplumsal refahın artırılmasını hedefler.

Yeşil işletmecilik ise işletmelerin çevresel etkilerini azaltmak, doğal kaynakları etkin kullanmak ve sürdürülebilirlik ilkelerini iş süreçlerine entegre etmek amacıyla yürüttükleri faaliyetleri ifade eder (Çakar, 2024: 23–24). Yeşil işletmeciliğin kapsamına şunlar dâhildir:

- Enerji ve su tasarrufu uygulamaları
- Atık yönetimi ve geri dönüşüm
- Yenilenebilir enerji kullanımı
- Çevre dostu ürün geliştirme
- Yeşil tedarik zinciri yönetimi

Bu uygulamalar, işletmelere hem çevresel fayda hem de rekabet avantajı sağlamaktadır.

1.1.4. Yeşil Pazarlamanın Amaçları

Yeşil pazarlama yalnızca çevreyi koruma arzusunu değil, aynı zamanda tüketici bilincini artırmayı ve sürdürülebilir yaşam anlayışını teşvik etmeyi amaçlar. Bu doğrultuda temel amaçları (Öztürk, 2024):

- Çevre dostu ürün ve hizmetlerin geliştirilmesi
- Doğal kaynakların verimli kullanımının teşvik edilmesi
- Çevresel etkilerin azaltılmasını sağlayacak yenilikçi çözümlerin uygulanması
- Tüketicilerin çevre bilincinin artırılması

Bu çerçevede yeşil pazarlama, sürdürülebilir kalkınmanın işletme düzeyindeki en önemli araçlarından biri olarak değerlendirilmektedir.

1.1.5. Yeşil Pazarlamanın Literatürdeki Konumu

Yeşil pazarlama, sürdürülebilir kalkınma, kurumsal itibar yönetimi, çevre etiketi uygulamaları, yeşil tüketici davranışları ve döngüsel ekonomi gibi birçok alanla ilişkilendirilmiştir (Çağlayan, 2024: 17). Ürünlerin çevresel etkilerinin azaltılması, karbon ayak izinin düşürülmesi, geri dönüşüm uygulamalarının yaygınlaştırılması gibi unsurlar bu literatürün temel bileşenlerini oluşturur.

Mahmoud (2018) yeşil pazarlama uygulamalarını şu başlıklarla özetlemektedir:

- Çevre dostu ürün tasarımı
- Geri dönüştürülebilir ambalaj kullanımı
- Enerji verimliliği
- Karbon ayak izi azaltımı
- Tüketicilerin çevre bilinci konusunda bilgilendirilmesi

1.1.6. Yeşil Pazarlamanın Tarihsel Gelişimi

1970'ler: Çevresel farkındalığın yükselişi

ISSN
3023-5634

1970'li yıllarda çevresel sorunlar kamuoyunun gündemine girmiş, geri dönüştürülebilir ürünler ve çevre dostu ambalajlar önem kazanmıştır. 1972 Stockholm Konferansı, çevresel konuların ilk kez uluslararası ölçekte tartışıldığı bir platform olmuştur (Wymer & Polonsky, 2015).

1980'ler: Sürdürülebilir kalkınma anlayışının güçlenmesi

Brundtland Raporu (1987), sürdürülebilir kalkınma kavramını küresel literatüre kazandırmış ve çevre–ekonomi–toplum ilişkisinin önemini vurgulamıştır (Carley & Christie, 2017).

1990'lar: Yeşil pazarlamanın yaygınlaşması

Bu dönemde:

- Tüketicilerin çevresel duyarlılığı artmış
- Yeşil etiketleme uygulamaları yaygınlaşmış
- ISO 14001 gibi çevre yönetim standartları oluşturulmuştur

2000'ler: Küresel iklim politikalarının etkisi

Kyoto Protokolü, Paris Anlaşması ve artan iklim krizi farkındalığı yeşil pazarlamayı işletmeler açısından stratejik bir zorunluluk hâline getirmiştir (Sachs, 2015).

2010 sonrası: Dijitalleşme ve sürdürülebilirlik entegrasyonu

Sosyal medya ve dijital platformlar, çevreci farkındalığın yayılmasını kolaylaştırırken; e-ticaret çevre dostu ürünlere erişimi artırmıştır (Nekmahmud & Fekete-Farkas, 2020).

Günümüz

Yeşil pazarlama, rekabet avantajı yaratmanın yanı sıra kurumsal sorumluluğun temel bir unsuru hâline gelmiştir. Artan çevresel sorunlar ve yasal düzenlemeler, işletmelerin sürdürülebilirlik odaklı stratejiler geliştirmesini zorunlu kılmaktadır.

1.1.7. Yeşil Pazarlamanın Geleceği

Gelecekte yeşil pazarlamanın daha da önem kazanacağı öngörülmektedir. Yenilenebilir enerji teknolojilerinin yaygınlaşması, çevre dostu üretim maliyetlerinin düşmesi ve döngüsel ekonomi modellerinin güçlenmesi bu gelişimi destekleyecektir (Easterly, 2015). İşletmelerin sürdürülebilirlik uygulamalarını benimsemesi, hem çevresel koruma hem de rekabet avantajı bakımından kritik bir rol oynamaya devam edecektir.

2. YÖNTEM

Bu araştırma, yeşil pazarlamanın gelişim sürecini sürdürülebilir kalkınma hedefleri bağlamında incelemeye yönelik olarak tasarlanmış nitel bir çalışmadır. Çalışma, konuya ilişkin mevcut literatürü derinlemesine analiz ederek kavramların tarihsel gelişimini, temel tartışma alanlarını ve sürdürülebilir kalkınma hedefleriyle ilişkisini ortaya koymayı amaçlamaktadır. Nitel araştırma yaklaşımı, özellikle kavramların anlamlarının, ilişkilerinin ve dönüşümlerinin bağlamsal olarak yorumlanmasına imkân tanıdığı için tercih edilmiştir.

2.1. Araştırma Deseni

Çalışma, nitel araştırma yöntemleri içerisinde yer alan kavramsal içerik analizi ve doküman analizi tasarımına dayanmaktadır. Kavramsal içerik analizi, yeşil pazarlama, sürdürülebilir kalkınma, kurumsal sürdürülebilirlik, çevresel bilinç ve yeşil işletmecilik gibi temel kavramların literatürde nasıl ele alındığını incelemek amacıyla kullanılmıştır. Doküman analizi ise farklı dönemlere ait akademik makaleler, raporlar, uluslararası kuruluşların belgeleri

ISSN
3023-5634

(özellikle Birleşmiş Milletler SKH raporları), kitaplar ve kurumsal politika metinlerini kapsamaktadır.

2.2. Veri Kaynakları

Araştırmanın veri seti, aşağıdaki akademik ve kurumsal kaynaklardan elde edilmiştir:

- Ulusal ve uluslararası hakemli dergilerde yayımlanmış akademik makaleler
- Kitaplar, kitap bölümleri ve tez çalışmaları
- Birleşmiş Milletler Sürdürülebilir Kalkınma Hedefleri (SKH) raporları
- OECD, UNEP, Dünya Bankası gibi kurumların çevresel sürdürülebilirlik ve yeşil ekonomi raporları
- ISO 14001 ve benzeri çevresel yönetim standartlarına ilişkin dokümanlar
- Yeşil pazarlama ve sürdürülebilirlik konularında yayımlanmış politika raporları

Kaynaklar, belirli bir zaman aralığı kısıtlaması yapılmadan incelenmiş; ancak yeşil pazarlamanın tarihsel gelişimini temsil etmesi açısından 1970 sonrası literatüre ağırlık verilmiştir.

2.3. Veri Toplama Süreci

Veri toplama süreci aşağıdaki aşamalardan oluşmuştur:

1. **Kavramsal çerçeve belirleme:** Çalışmanın odak kavramları seçilmiş ve her kavramla ilgili temel literatür tespit edilmiştir.
2. **Tarama süreci:** Google Scholar, Web of Science, Scopus, DergiPark ve YÖK Ulusal Tez Merkezi gibi veritabanlarında "green marketing", "sustainable development goals", "environmental sustainability", "green business", "eco-friendly marketing" anahtar kelimeleri kullanılarak kapsamlı bir tarama yapılmıştır.
3. **Kaynak seçimi:** Ulaşılan çalışmalar arasından araştırma amacına uygun olanlar seçilmiş, tekrar eden, yetersiz bilgi içeren ve güvenilirliği düşük olan içerikler ayıklanmıştır.
4. **Dokümanların sınıflandırılması:** Kaynaklar tarihsel dönemlere, içerik temalarına ve kuramsal yaklaşımlara göre kategorize edilmiştir.
5. **Verilerin kodlanması:** Temalar doğrultusunda açık, eksen ve seçici kodlama teknikleri kullanılarak veriler analiz edilmiştir.

2.4. Veri Analizi

Toplanan veriler, tematik analiz ve kavramsal içerik analizi yöntemleriyle incelenmiştir. Analiz sürecinde şu aşamalar izlenmiştir:

- **Verilerin okunması ve düzenlenmesi:** Elde edilen tüm metinler detaylı şekilde okunarak anlam birimleri çıkarılmıştır.
- **Kodlama:** Yeşil pazarlama yaklaşımları, sürdürülebilir kalkınma ile ilişkisi, tarihsel gelişim aşamaları ve kurumsal uygulamalar gibi temalar doğrultusunda kodlar oluşturulmuştur.
- **Temaların belirlenmesi:** Kodlar anlamlı gruplar hâlinde bir araya getirilerek ana ve alt temalar oluşturulmuştur.

ISSN
3023-5634

- **Yorumlama:** Temalar arasındaki ilişkiler kurularak kavramsal bir değerlendirme yapılmış ve bulgular literatürle birlikte yorumlanmıştır.

2.5. Araştırmanın Sınırlılıkları

Bu çalışma nitel bir araştırma olduğu için, bulgular belirli bir örneklem grubuna değil, literatürde yer alan çalışmaların analizine dayanmaktadır. Bu durum genellenebilirliği sınırlamakla birlikte, kavramların derinlemesine incelenmesine olanak sağlamaktadır. Ayrıca, literatürün kapsamı araştırmacının erişebildiği veri tabanları ve dokümanlarla sınırlıdır.

2.6. Etik Hususlar

Araştırmada kullanılan tüm kaynaklara akademik etik kurallar çerçevesinde atıf yapılmıştır. Literatürde yer alan görüşler olduğu gibi aktarılmış, araştırmacı tarafından manipüle edilmemiştir. Çalışma, herhangi bir kurum ya da katılımcı ile doğrudan veri toplamadığı için ek etik kurul onayı gerektirmemektedir.

3. BULGULAR

Bu bölümde, yeşil pazarlamanın gelişim sürecine ilişkin literatürün kavramsal ve tematik analizi sonucunda elde edilen bulgular sunulmaktadır. Analizler, yeşil pazarlama yaklaşımının tarihsel olarak nasıl şekillendiğini, sürdürülebilir kalkınma hedefleriyle bağlantılarını ve işletmelerin uygulama pratiklerinde ortaya çıkan eğilimleri ortaya koymaktadır. Bulgular, tematik analiz sonucunda belirlenen dört ana tema çerçevesinde sunulmuştur.

3.1. Yeşil Pazarlamanın Tarihsel Gelişim Dinamikleri

Literatür analizi, yeşil pazarlama olgusunun 1970'lerden itibaren çevresel sorunların gündeme gelmesiyle ortaya çıktığını ve farklı dönemlerde farklı odak alanları içerdiğini göstermiştir.

- **1970'li yıllar:** Çevre bilincinin yükselmesi ve ilk uluslararası çevre konferanslarının düzenlenmesi ile yeşil ürünlere yönelik farkındalık artmıştır. Bu dönemde temelde çevre dostu ürün tasarımı ve geri dönüşüm odaklı bir yaklaşım hâkimdir.
- **1980'ler:** Sürdürülebilir kalkınma kavramının literatüre girmesi, yeşil pazarlamayı daha kurumsal bir çerçeveye taşımıştır. Firmalar çevre yönetimi programları ve ilk çevresel raporlarını geliştirmeye başlamıştır.
- **1990'lar:** Yeşil etiketleme, çevre dostu sertifikasyonlar ve ISO 14001 gibi standartların yaygınlaşması, yeşil pazarlamayı daha sistematik bir yapıya dönüştürmüştür.
- **2000 sonrası:** İklim değişikliği, karbon ayak izi ve sürdürülebilir üretim kavramları ön plana geçmiş; yeşil pazarlama yalnızca ürün temelli olmaktan çıkarak firmanın bütünsel sürdürülebilirlik stratejisi hâline gelmiştir.
- **2010 ve sonrası:** Dijitalleşme ve sosyal medya, çevre bilincinin daha hızlı yayılmasını sağlamış; tüketici baskısı ve kurumsal şeffaflık ihtiyacı artmıştır.

Bu bulgu, yeşil pazarlamanın durağan bir kavram olmadığını, sürdürülebilirlik anlayışındaki gelişmelere paralel olarak sürekli evrimleştiğini göstermektedir.

3.2. Sürdürülebilir Kalkınma Hedeflerinin Yeşil Pazarlama Üzerindeki Etkisi

Analizler, Birleşmiş Milletler'in 2015 yılında ilan ettiği **Sürdürülebilir Kalkınma Hedefleri (SKH)**nin, yeşil pazarlama stratejilerinin kapsamını genişlettiğini ve işletmeler için yeni sorumluluk alanları doğurduğunu ortaya koymaktadır.

ISSN
3023-5634

- SKH 12 (Sorumlu Üretim ve Tüketim), firmaların sürdürülebilir üretim süreçlerine geçişini teşvik etmekte ve yeşil pazarlamanın temel referans noktalarından biri hâline gelmiştir.
- SKH 13 (İklim Eylemi), karbon emisyonlarını azaltmaya yönelik pazarlama söylemlerini güçlendirmektedir.
- SKH 7 (Temiz Enerji) ve 9 (Sanayi, Yenilikçilik ve Altyapı), yenilenebilir enerji kullanımını ve çevre dostu teknolojilerin benimsenmesini desteklemektedir.
- SKH 6, 14 ve 15, doğal kaynakların korunması, su verimliliği ve ekosistemlerin yaşatılması gibi temalarla yeşil iş modellerinin çevresel boyutunu güçlendirmektedir.

Bulgular, SKH'nin yalnızca çevresel değil; sosyal ve ekonomik sürdürülebilirlik alanlarında da firmaları sorumluluk almaya yönelttiğini göstermektedir. Bu kapsamda yeşil pazarlama, SKH'nin işletme düzeyindeki yansımalarından biri hâline gelmiştir.

3.3. Yeşil Pazarlama Uygulamalarının İşletme Stratejilerindeki Yeri

Literatürün analizi sonucunda, yeşil pazarlamanın birçok işletme tarafından rekabet avantajı, kurumsal itibar ve farklılaşma aracı olarak kullanıldığı tespit edilmiştir.

- İşletmelerin yeşil stratejileri; enerji verimliliği, atık yönetimi, geri dönüşüm, çevre dostu ambalaj ve karbon ayak izi azaltımı gibi alanlarda yoğunlaşmaktadır.
- Yeşil ürün geliştirme süreçlerinde yaşam döngüsü yaklaşımı yaygınlaşmıştır. Ürünün üretim aşamasından bertarafına kadar çevresel etkinin en aza indirilmesine odaklanılmaktadır.
- Yeşil tedarik zinciri yönetimi, kurumsal sürdürülebilirliğin önemli bir bileşeni olarak öne çıkmaktadır.
- Araştırmalar, tüketicilerin çevreci ürünlere yönelik talebinin giderek arttığını ve bunun firmaları yeşil inovasyona yönlendirdiğini göstermektedir.

Bu bulgular, yeşil pazarlamanın yalnızca çevre hassasiyetine değil, aynı zamanda ekonomik performansa katkıda bulunan stratejik bir araç olduğunu ortaya koymaktadır.

3.4. Tüketici Davranışlarında Yeşil Farkındalığın Artışı

Bulgular, tüketicilerin çevresel duyarlılıklarının zamanla arttığını ve bunun yeşil pazarlama stratejilerini doğrudan etkilediğini göstermektedir.

- Tüketiciler, çevre dostu ürünlere daha fazla ödeme yapmaya istekli hâle gelmiştir.
- Genç tüketiciler (özellikle Z kuşağı) sürdürülebilir markaları tercih etmekte ve sosyal medyada çevreyi korumaya yönelik duyarlılık göstermektedir.
- Yeşil marka imajı, satın alma davranışlarında itici bir güç hâline gelmiştir.
- Ancak bazı tüketicilerin "yeşil aklama" (greenwashing) konusunda kaygıları olduğu, bu nedenle şeffaflık ve doğrulanabilir bilgi talep ettikleri görülmüştür.

Bu sonuçlar, tüketici davranışlarının yeşil pazarlama uygulamalarını şekillendiren önemli bir faktör olduğunu göstermektedir.

3.5. Yeşil Pazarlama ile Sürdürülebilir Kalkınma Arasındaki Bütünleşik İlişki

Analiz, yeşil pazarlama ile sürdürülebilir kalkınma arasında çift yönlü bir ilişki olduğunu ortaya koymaktadır:

1. Yeşil pazarlama, sürdürülebilir kalkınmanın çevresel boyutuna katkı sağlar.

ISSN
3023-5634

2. Sürdürülebilir kalkınma hedefleri ise yeşil pazarlamanın kapsamını, ilkelerini ve uygulama alanlarını yeniden tanımlar.

Bu bütünleşik ilişki, işletmelerin çevresel, sosyal ve ekonomik performansını birlikte ele alan bir anlayışın gelişmesine zemin hazırlamaktadır.

4. SONUÇ, TARTIŞMA VE ÖNERİLER

4.1. Sonuç

Bu çalışma, yeşil pazarlamanın gelişim sürecini sürdürülebilir kalkınma hedefleri (SKH) bağlamında kavramsal bir perspektifle incelemiş ve disiplinin tarihsel dönüşümünü ortaya koymuştur. Elde edilen bulgular doğrultusunda yeşil pazarlamanın, başlangıçta çevresel duyarlılığın sınırlı olduğu bir dönemde daha çok tüketici bilincine yönelik bir yaklaşım olarak doğduğu, ancak zaman içinde küresel çevre sorunlarının artması, sürdürülebilirlik söyleminin güçlenmesi ve uluslararası kurumların politik yönlendirmeleriyle daha stratejik ve bütüncül bir boyut kazandığı sonucuna ulaşılmıştır.

Çalışmada ayrıca, yeşil pazarlamanın günümüzde yalnızca çevreci ürün tasarımı ya da çevre dostu iletişim uygulamaları ile sınırlı olmadığı; işletmelerin üretim süreçlerinden tedarik zincirine, enerji kullanımından kurumsal yönetişime kadar geniş bir alanda sürdürülebilirlik ilkelerini benimsemelerini gerektiren çok yönlü bir yaklaşım hâline geldiği belirlenmiştir. SKH'lerin getirdiği çerçeve ise işletmeler için hem yol gösterici bir rehber hem de ölçülebilir sürdürülebilirlik performansı sunan bir politika aracı niteliğindedir.

Genel olarak, yeşil pazarlama anlayışının ekonomik değer yaratma ile çevresel sorumluluk arasında bir denge arayışının sonucu olarak ortaya çıktığı ve sürdürülebilir kalkınma hedefleri ile uyumlu biçimde evrilmeye devam ettiği görülmektedir.

4.2. Tartışma

Elde edilen bulgular, yeşil pazarlamanın gelişiminde üç temel dinamik olduğunu göstermektedir:
(1) çevresel krizlerin artması,
(2) tüketici bilincinin yükselmesi,
(3) küresel politika belgelerinin işletmeleri yönlendirmesi.

Yeşil Pazarlamanın Stratejik Boyutu

Günümüzde yeşil pazarlama, yalnızca bir iletişim stratejisi değil; işletmelerin tüm değer yaratma süreçlerini kapsayan bir yönetim anlayışı hâline gelmiştir. Bu bağlamda araştırma bulguları, yeşil pazarlamanın sürdürülebilir iş modelleri ile bütünleşmesi gerektiğini; aksi hâlde uygulamaların "yeşil aklama" riskine dönüşebileceğini göstermektedir.

Tüketici Davranışlarının Dönüşümü

Tartışma sonuçları, tüketicilerin çevresel duyarlılığının geçmişe kıyasla daha yüksek olduğunu; ancak satın alma davranışlarında fiyat, kalite ve marka güveninin hâlâ belirleyici olduğunu ortaya koymaktadır. Dolayısıyla işletmelerin sürdürülebilir ürün sunarken aynı zamanda rekabetçi değer yaratmaları önemlidir.

SKH'lerin Rolü

Araştırma, SKH'lerin yalnızca çevresel değil aynı zamanda ekonomik ve sosyal sürdürülebilirlik boyutlarını da içermesi nedeniyle yeşil pazarlama uygulamalarına bütünsel bir çerçeve sunduğunu göstermektedir. Bu durum, şirketlerin sürdürülebilirlik performanslarını

raporlayabilmeleri ve uluslararası rekabet gücü elde edebilmeleri açısından önemli bir fırsat yaratmaktadır.

4.3. Öneriler

İşletmelere Yönelik Öneriler

1. **Bütüncül Sürdürülebilirlik Yaklaşımı Benimsenmeli:** İşletmeler yalnızca ürün düzeyinde değil, üretim süreçleri, tedarik zinciri, atık yönetimi ve enerji verimliliği gibi tüm alanlarda sürdürülebilirlik odaklı stratejiler geliştirmelidir.
2. **Yeşil Aklamadan Kaçınılmalı:** Pazarlama mesajları gerçek çevresel faydalara dayanmalı; şeffaf raporlama ve uluslararası standartlar (ISO 14001 vb.) kullanılmalıdır.
3. **SKH'ler ile Uyumlu Stratejiler Geliştirilmeli:** İşletmeler faaliyetlerini SKH 12 (Sorumlu Üretim ve Tüketim), SKH 13 (İklim Eylemi) ve SKH 7 (Temiz Enerji) başta olmak üzere hedeflerle ilişkilendirmelidir.
4. **Tüketici Eğitimi Desteklenmeli:** İşletmeler, çevre bilincinin gelişmesi için bilgilendirici kampanyalar düzenlemeli ve sürdürülebilir ürün kullanımını teşvik etmelidir.

Politika Yapıcılara Yönelik Öneriler

1. **Yeşil pazarlamayı destekleyici teşvik politikaları** geliştirilmelidir (vergi indirimleri, sürdürülebilir teknoloji yatırımlarına destek vb.).
2. **Çevre etiketleme ve sertifikasyon sistemleri** daha yaygın hâle getirilmeli ve standartlaştırılmalıdır.
3. **Sürdürülebilir tüketimi destekleyen ulusal stratejiler** oluşturulmalı, eğitim programları toplumsal farkındalığı artıracak şekilde genişletilmelidir.

Gelecek Araştırmalar İçin Öneriler

1. Farklı sektörlerde yeşil pazarlama uygulamalarının karşılaştırmalı olarak incelenmesi,
2. Tüketicilerin yeşil ürünlere yönelik satın alma eğilimlerinin deneysel yöntemlerle ölçülmesi,
3. SKH'lere uyum düzeyinin kurumsal performansa etkisinin ampirik çalışmalarla değerlendirilmesi önerilmektedir.

5. KAYNAKLAR

Carley, M., & Christie, I. (2017). *Managing sustainable development.* Routledge.

Colglazier, W. (2015). *Sustainable development agenda: 2030*. Science, 349(6252), 1048–1050.

Çağlayan, H. (2024). *Sürdürülebilir kalkınma anlayışında yeşil pazarlama* [Yayımlanmamış yüksek lisans tezi]. Van Yüzüncü Yıl Üniversitesi, Sosyal Bilimler Enstitüsü.

Çakar, N. (2024). *İşletmelerin sosyal sorumlulukları çerçevesinde yeşil pazarlama ve uygulamaları* (Yüksek lisans tezi). İbn Haldun Üniversitesi, Lisansüstü Eğitim Enstitüsü.

Easterly, W. (2015). *The trouble with the sustainable development goals*. Current History, 114(775), 322.

Eneizan, B. M., & Wahab, K. A. (2016). *Prior research on green marketing and green marketing strategy: Critical analysis.*

Erbaşlar, G. (2012). Yeşil pazarlama. *Mesleki Bilimler Dergisi (MBD)*, 1(2), 94-101.

Garg, A. (2015). Green marketing for sustainable development: An industry perspective. *Sustainable Development, 23(4),* 301-316.

Gedik, Y. (2020). Yeşil pazarlama stratejileri ve işletmelerin amaçlarına etkisi. *International Anatolia Academic Online Journal Social Sciences Journal, 6(2),* 46–65.

Govender, J. P., & Govender, T. L. (2016). The influence of green marketing on consumer purchase behavior. *Environmental Economics, 7(2),* 77–85.

Kumar, P. (2016). State of green marketing research over 25 years (1990–2014) literature survey and classification. *Marketing Intelligence & Planning*, 34(1), 137–158.

Mahmoud, T. O. (2018). Green marketing: A marketing mix concept. *International Journal of Electrical, Electronics and Computers,* 4(1), 20–26.

Nekmahmud, M., & Fekete-Farkas, M. (2020). *Why not green marketing?Determinants of consumers' intention to green purchase decision in a new developing nation.* Sustainability, 12(19), 7880.

Nogueira, S. (2020). The importance of a green marketing strategy in brand communication-M. Coutinho multi-brand car dealer case in Northern Portugal. *Economics Business and Organization Research*, 351-373.

Öztürk, A. (2024). Yeşil Pazarlama Yöntemi Kullanımının Tüketicilerin Yeşil Ürünleri Satın Alımı Üzerine Etkisi: Üsküdar'da Bir Çalışma. *Bahçeşehir Üniversitesi / Lisansüstü Eğitim Enstitüsü / İşletme Ana Bilim Dalı Yüksek Lisans Tezi*, 29.

Öztürk, A. (2024). Yeşil Pazarlama Yöntemi Kullanımının Tüketicilerin Yeşil Ürünleri Satın Alımı Üzerine Etkisi: Üsküdar'da Bir Çalışma. *Bahçeşehir Üniversitesi / Lisansüstü Eğitim Enstitüsü / İşletme Ana Bilim Dalı Yüksek Lisans Tezi*, 29.

Rustamov, E. (2025). Sürdürülebilir pazarlama stratejileri bağlamında yeşil pazarlama ve pazarlamada minimalist yaklaşımlar (Yüksek lisans tezi, Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, İşletme Anabilim Dalı, Üretim Yönetimi ve Pazarlama Bilim Dalı). Selçuk Üniversitesi.

Sachs, J. D. (2015). *The age of sustainable development*. Columbia University Press.

Şancı, Ş. (2023). *İşletmelerin yeşil pazarlama uygulamaları çerçevesinde yaptıkları kurumsal sosyal sorumluluk faaliyetlerine yönelik tüketici algısının marka güveni, marka sadakati ve satın alma niyetine etkisi* (Yüksek lisans tezi). Bursa Teknik Üniversitesi, Lisansüstü Eğitim Enstitüsü.

Wymer, W., & Polonsky, M. J. (2015*). Environmental sustainability and corporate responsibility in the 1970s: A historical perspective* (pp. 102-125). New York: Environmental Business Press

Yüksel, A., ve Barut, D. (2023). Uluslararası çevre hukukunda sürdürülebilir kalkınma. *Çevre Şehir ve İklim Dergisi*, 2(3), 32–58.

EXTENDED ABSTRACT

This study offers a thoroughly expanded and conceptually enriched examination of the evolution of green marketing within the overarching framework of the United Nations Sustainable Development Goals (SDGs), aiming to understand how the concept has transitioned from a narrowly defined environmentally oriented promotional practice into a comprehensive,

ISSN
3023-5634

strategically embedded sustainability paradigm directing contemporary corporate management. The research is grounded in the accelerating global urgency surrounding climate change, biodiversity loss, resource depletion, and ecological degradation, all of which intensify the call for responsible production and consumption practices and elevate sustainability to a central expectation among consumers, policymakers, investors, and civil society actors. While the early formulation of green marketing in the 1970s and 1980s largely revolved around environmentally friendly product attributes or pollution-prevention advertising appeals, the intensification of global environmental concerns and the institutionalization of sustainable development have pushed the concept far beyond its initial boundaries. Today, green marketing represents an integrative and multidimensional management philosophy that aligns environmental, economic, and social dimensions of sustainability with long-term strategic decision-making, innovation agendas, and corporate governance structures. Against this backdrop, the main objective of the present study is to map this conceptual transformation, trace the theoretical progression of green marketing, evaluate its contemporary strategic significance, and assess the extent to which it aligns with—and is strengthened by—the SDGs, which provide a universal and comprehensive blueprint for global sustainability efforts. Employing a qualitative research design, the study uses document analysis as its methodological foundation, systematically reviewing academic literature, international reports, policy documents, and empirical studies to identify how green marketing has evolved conceptually and operationally across decades. This methodological approach allows for a detailed interpretation of the historical foundations of green marketing, beginning with its emergence during the rise of global environmental awareness in the 1970s, advancing through the sustainability-oriented transformations of the 1990s and early 2000s, and culminating in the strategic, innovation-driven, and stakeholder-oriented paradigm observable today. The findings reveal that green marketing's earliest manifestations were closely tied to regulatory pressures, ecological conservation movements, and shifting consumer expectations, leading firms to incorporate recyclable materials, biodegradable packaging, and pollution-reducing technologies into their product strategies. However, these initiatives were often short-term, fragmented, or limited in scope, lacking the organizational integration needed to achieve deeper environmental impact. The turn of the 1990s marked a significant turning point as global summits such as the Rio Earth Summit, alongside the emergence of seminal policy documents like the Brundtland Report, accelerated the institutionalization of sustainable development. Consequently, green marketing began to integrate broader organizational dimensions such as green supply-chain management, eco-efficiency, waste minimization, renewable energy adoption, and stakeholder engagement. This period also witnessed the rise of environmental management standards such as ISO 14001, which legitimized the concept and introduced verifiable frameworks that encouraged firms to adopt holistic environmental strategies rather than isolated interventions. However, the most transformative phase in the evolution of green marketing emerged with the global adoption of the SDGs in 2015. The SDGs provide a comprehensive and interconnected sustainability framework that aligns environmental, economic, and social concerns, thereby offering firms a clear and globally recognized reference for structuring, implementing, measuring, and communicating sustainability-oriented marketing practices. Particularly relevant are SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 17 (Partnerships for the Goals), which directly encourage organizations to adopt circular economy models, reduce carbon emissions, improve energy efficiency, innovate in sustainable technologies, and collaborate with stakeholders to drive systemic transformation. Within this context, green marketing has evolved into a strategic mechanism for value creation, reputation building, risk mitigation, and competitive differentiation. Firms increasingly integrate lifecycle assessments, carbon footprint analyses, sustainability reporting, green branding, eco-

ISSN
3023-5634

certification, and transparent communication strategies into their marketing processes to demonstrate authenticity and strengthen stakeholder trust. Moreover, shifting consumer demographics—especially among younger generations—have heightened expectations for corporate sustainability performance, reinforcing market pressures for authentic, measurable, and long-term environmental commitments. Despite these advancements, the study highlights persistent challenges that continue to shape the green marketing landscape, particularly the issue of greenwashing. Defined as misleading or exaggerated claims about environmental performance, greenwashing undermines consumer trust, distorts market competition, and threatens the credibility of sustainability-oriented marketing. As greenwashing becomes more sophisticated, the need for regulatory oversight, transparent reporting mechanisms, credible verification processes, and globally aligned sustainability metrics becomes increasingly vital. In this regard, the SDGs provide a valuable framework that encourages measurable and verifiable action, offering firms an opportunity to substantiate their environmental claims through alignment with internationally recognized indicators and targets. The theoretical contribution of this study is multifold. It provides a holistic conceptual mapping of the evolution of green marketing, situating its transformation within major environmental milestones and the broader institutionalization of sustainability. It positions the SDGs as a catalyst for expanding the strategic meaning and organizational relevance of green marketing, linking the field more directly to global sustainability governance. Additionally, the study synthesizes interdisciplinary perspectives from marketing, environmental management, sustainability science, corporate governance, and consumer behavior, demonstrating that green marketing has increasingly shifted from a communication-oriented activity to a systemic and strategically embedded corporate function. The practical implications for organizations are equally significant. Firms seeking to enhance sustainability performance and build long-term competitive advantage must embed green marketing into their strategic planning processes, align marketing activities with measurable sustainability goals, and ensure organizational authenticity through transparent reporting, stakeholder collaboration, and continuous innovation. In conclusion, the expanded synthesis presented in this study demonstrates that the evolution of green marketing is deeply intertwined with global sustainability agendas. As environmental challenges intensify and societal expectations heighten, integrating green marketing with the SDGs becomes essential not only for corporate resilience but also for contributing meaningfully to global sustainable development. By offering a comprehensive conceptual examination of the historical, theoretical, and strategic evolution of green marketing, this study provides an important foundation for future academic research and practical guidance for organizations navigating the sustainability transition.

ISSN
3023-5634

Article Arrival Date
04.12.2025

Article Published Date
20.12.2025

Mapping The Landscape of Islamic Social Finance: A Bibliometric Analysis of Green Waqf

Dewi Insyırahti SALSABILLA[1], Muhammad SHULTHONI[2], Hendri Hermawan Adinugraha[3], Mochammad Hendri ALFAROUQ[4]

[1]Universitas Islam Negeri KH Abdurrahman Wahid, Sharia Economics, Indonesia

Orchid: 0009-0008-8990-6111

[2] Universitas Islam Negeri KH Abdurrahman Wahid, Sharia Economics, Indonesia

[3] Universitas Islam Negeri KH Abdurrahman Wahid, Sharia Economics, Indonesia

[4] University of Al-Azhar, Cairo, Egypt

Abstract

Green waqf has emerged as a strategic instrument within the broader framework of Islamic Social Finance (ISF) to support sustainable development initiatives and address contemporary socio-environmental challenges. Despite its growing relevance, academic discussions on green waqf remain fragmented, with limited understanding of the thematic evolution, intellectual structure, and research frontiers in this domain. This study aims to map the landscape of green waqf research within the ISF framework through a comprehensive bibliometric analysis. Using data retrieved from Scopus and analyzed with VOSviewer and Bibliometric (R), the study examines publication trends, influential authors, high-impact journals, co-authorship networks, keyword co-occurrences, and thematic clusters related to waqf, cash waqf, green sukuk, sustainable development, and the green economy. The findings reveal a rising research interest 2000-2025, characterized by clusters focusing on waqf asset management, integration of Islamic finance instruments, environmental sustainability, and institutional governance. The analysis also identifies green waqf as an emerging theme with significant potential to advance SDGs, particularly in climate action, sustainable cities, and poverty reduction. This study contributes to the literature by offering a structured overview of the intellectual development of green waqf research, highlighting existing gaps, and proposing future research directions. The results are expected to assist scholars, policymakers, and waqf institutions in optimizing the role of Islamic Social Finance to achieve sustainable development.

Keywords: Green Waqf, Islamic Social Finance, ISF, Bibliometric, SDGs

1. INTRODUCTION

Several environmental issues in Indonesian such as high exposure to flooding, extreme heat in coastal areas vulnerable to sea-level rise, and mangrove deforestation have further exacerbated the impacts of climate change. Large segments of the population remain highly dependent on agriculture, aquaculture, and fisheries, making these communities disproportionately affected by environmental stressors. The World Bank's Global Risk Analysis ranks Indonesia 12th out of 35 countries facing relatively high mortality risks. Interestingly, on the other hand, Indonesia

ISSN
3023-5634

has approximately 14 million hectares of degraded and severely degraded land, along with hundreds of thousands of waqf land sites that hold significant potential for green development initiatives.

(BWI & UNDP, 2022).

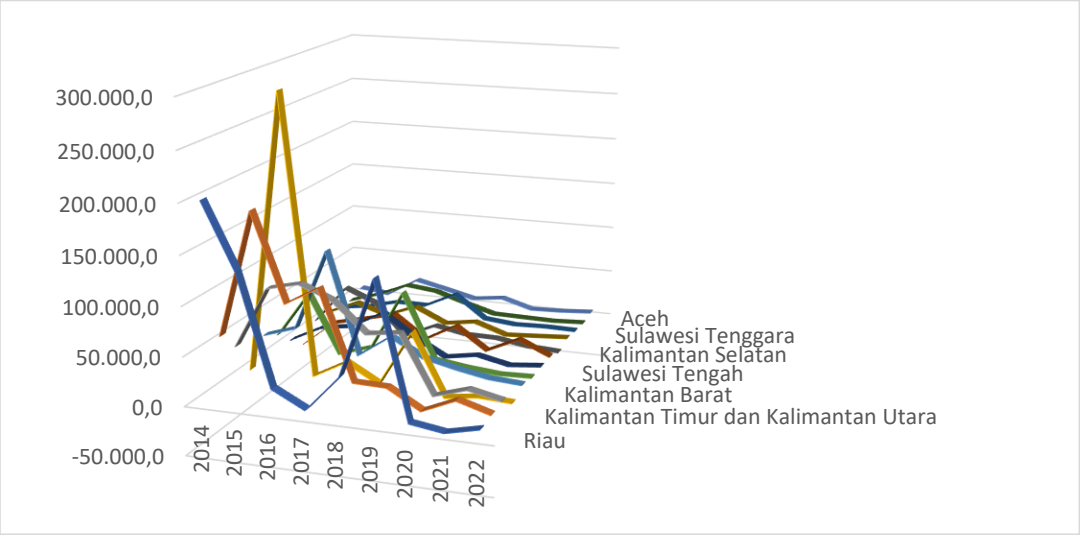


Figure 1. Indonesia's Net Deforestation Inside and Outside Forest Areas, 2013-2022 Ha/Year

During 2015–2017, several provinces such as Riau, South Sumatra, and Kalimantan recorded exceptionally high peaks of reforestation, reaching more than 200,000 hectares in a single year. This pattern is consistent with the post–forest fire period and the large-scale expansion of plantation estates. Deforestation in Indonesia is influenced by provincial-level economic activities, peaking between 2015 and 2017 and subsequently declining after 2018. Provinces with major extractive industries (palm oil, mining, and industrial timber plantations) recorded the highest rates. The downward trend indicates the effectiveness of land-conversion restrictions and ongoing restoration programs (BPS, 2024).

Corruption has spread on land and sea as a result of what people's hands have done, so that Allah may cause them to taste the consequences of some of their deeds and perhaps they might return to the right path (Ar-Rum, 41).

This surah provides a profound ethical and theological foundation for the study green waqf within the broader framework of Islamic social finance. The verse highlights the human-driven degradation on the natural environment and the moral responsibility entrusted to humankind as stewards (khalifah) of the earth. The growing ecological degradation observed across the globe reflects a broarder moral and structural crisis.

Whoever revives barren land will receive a reward, and whatever is eaten from it by wild animals he will also be rewarded" (HR. Al-Nasa'i)

This hadith highlights the spiritual merit associated with restoring unused or degraded land, emphasizing the environmental regeneration is not only a social responsibility but also a source of ongoing divine reward.

In addressing global climate challenges, all mitigation efforts and sustainable solutions require the active involvement of stakeholders at both national and regional levels, as well as participation from non-governmental economic education institutions and the broader community, to support the development of a civil society. Every party is obligated to contribute to improved climate-change mitigation efforts. This includes economists and business actors,

ISSN
3023-5634

who play a significant role by complying with licensing regulations, conducting Environmental Impact Assessments (AMDAL), adopting sustainable business practices, empowering workers and local communities in climate-change mitigation and adaptation initiatives, investing in green technological innovations, and enhancing transparency and reporting to all stakeholders (Majelis Ulama Indonesia, 2023).

1.1. Theoretical Framework

This study is grounded on three key theoretical pillars: Islamic Social Finance (ISF), The Evolution of Waqf Instruments, and Sustainable Development Theory. These theories provide a comprehensive foundation for understanding how green waqf has emerged, developed, and been positioned within the broader Islamic Social Finance landscape. Islamic Social Finance provide a normative and institutional foundation for promoting social welfare, equity, and sustainable development. Core elements of ISF is Zakat, Waqf, Infaq, Sadaqah and innovative financial tools.

A Sustainability oriented asset aligned with ecological stewardship (Khalifah) and Protection of the environment (hifz al-bia'h) is required within the framework of Islamic Social Finance (ISF), particularly waqf, which can be implemented through green finance and green waqf initiatives. Economic growth must be harmonized with environmental conservation. In the Islamic worldview sustainability is embedded In the framework of the new *maqāṣid al-sharī'ah*, which aims to preserve religion, life, intellect, lineage, and property, this becomes increasingly urgent as climate issues must be addressed promptly to advance climate action in line with SDG 13 and Responsible Production and Consumption in accordance with SDG 12.

In support of these efforts, this study seeks to contribute particularly to the fourth point, namely encouraging entrepreneurs and society at large to increase investment and innovation through green waqf. The Indonesian Waqf Board (BWI) and the United Nations Development Program (UNDP) are currently developing green waqf initiatives in Indonesia. The development of green waqf serves as a response to protect the planet from environmental degradation and other social impacts. Waqf has become a matter of serious concern for the Indonesian government, including waqf designated for environmental purposes (Huda et al., 2025a). Waqf can serve as a sustainable instrument for achieving food security, both within the green economy and the blue economy frameworks. Abandoned waqf land can be utilized as agricultural land and can help prevent land-use conversion. Cash waqf and various hybrid waqf models can be invested in the real sector to enhance food production and improve food distribution (Listiana et al., 2025). Waqf can serve as an innovative financing mechanism for sustainable infrastructure projects. Gaps in existing studies propose various approaches to building financial models aligned with Islamic waqf principles, such as integrating monetary waqf with renewable energy initiatives or utilizing fintech to enhance waqf management. These insights can assist policymakers and practitioners in promoting international and cross-border collaboration to advance waqf-based sustainable development.

Social implications: This study highlights the potential of waqf to address key socio-economic challenges, including poverty alleviation, community welfare, and inclusive urban development. The proposed use of waqf for financing green infrastructure projects underscores a pathway toward more equitable and inclusive development strategies. The emphasis on the long-term socio-economic impacts of waqf-funded initiatives encourages policies and research aimed at maximizing the social benefits of such projects, ensuring that they contribute to the well-being of diverse communities (Mohamed & Akande, 2025a). sustainable waqf assets: an assessment model proposed based on environmental design and green architectural principles (Keskin & Dağgülü, 2025). Cash waqf, as a form of green finance, holds significant potential for addressing funding challenges in investment (Suwandari & Suratkon, 2025). Halal financing

ISSN
3023-5634

aims to achieve economic growth while ensuring that all financial activities comply with Islamic ethics, thereby aligning with the sustainability objectives of the sustainable halal financing framework for the Blue–Green economy. This framework focuses on how Islamic financial principles can be leveraged to promote environmental sustainability and ethical investment. With appropriate regulatory support and collaboration among stakeholders, sustainable halal financing can play a crucial role in fostering a more resilient and inclusive global economy, as well as encouraging investment in key sectors that contribute to environmental stewardship and social responsibility (Oseni et al., 2025). Green waqf serves as a mechanism for climate action and reflects the role of Islamic social finance in addressing environmental issues (Widiastuti et al., 2025).

2. METHOD

Bibliometrics is the study of academic publishing that uses statistics to describe publishing trends and to highlight relationships between published works. Likened to epidemiology, researchers seek to answer questions about a field based on data about publications (e.g., authors, topics, funding) in the same way that an epidemiologist queries patient data to understand the health of a population (Ninkov et al., 2021).

The research method employed in this study is a literature review, involving the collection, identification, and analysis of all publications related to green waqf from 2000 to 2025, using primary data sources from various digital references indexed in Scopus and Google Scholar. To ensure data accuracy and validity, additional literature from books, journals, and reports from multiple sources is incorporated. The analytical tool used is VOSviewer, applying a bibliometric approach with co-occurrence analysis in the title field using binary counting, presented through Network Visualization and Density Visualization.

This study employed a bibliometric approach using Scopus and google scholar as the main data source. A total of 242 documents publish between 2000-2025 were retrieved using keywords ‘green waqf and ‘Islamic Social Finance’. Data were analyzed using VOSviewer for network visualization and Bibliometric for Descriptive statistics.

3. FINDINGS

The results of the bibliometric analysis indicate that research on green waqf within the framework of Islamic Social Finance has experienced a significant increase throughout 2000–2025, reflecting growing academic attention toward the role of waqf in sustainable development agendas. Nevertheless, the research area has not yet reached full maturity. The thematic mapping reveals four dominant clusters: waqf asset management, the integration of Islamic financial instruments such as cash waqf and green sukuk, environmental sustainability issues, and institutional governance. Green waqf emerges as an evolving theme, demonstrating considerable potential to support sustainable development, particularly the SDGs related to climate action, sustainable cities, and poverty alleviation. The findings underline that green waqf remains a relatively new research domain that requires further exploration to be optimized as a strategic instrument for advancing Islamic Social Finance and supporting broader sustainable development agendas

ISSN
3023-5634

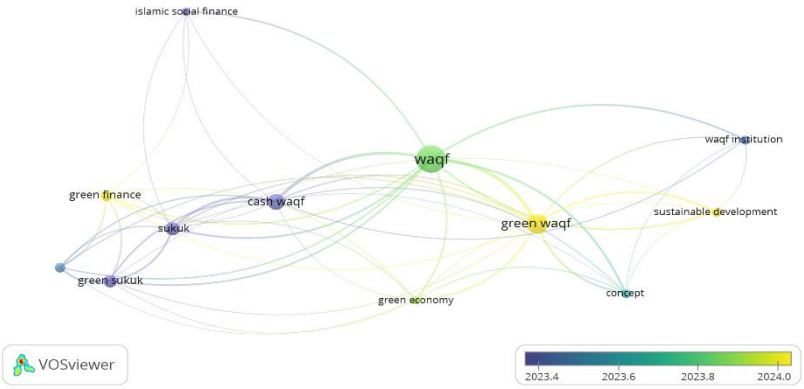


Figure 1. Co-Occurrence Bibliometric Based on Network Visualization

Green Waqf is an emerging topic that is rapidly developing within Islamic Social Finance. The visualization illustrates an evolution from cash waqf toward green finance, culminating in green waqf aligned with the SDGs. The latest topics increasingly highlight themes such as green waqf, green finance, and sustainable development, which remain relatively underexplored, as indicated by the smaller yellow nodes.

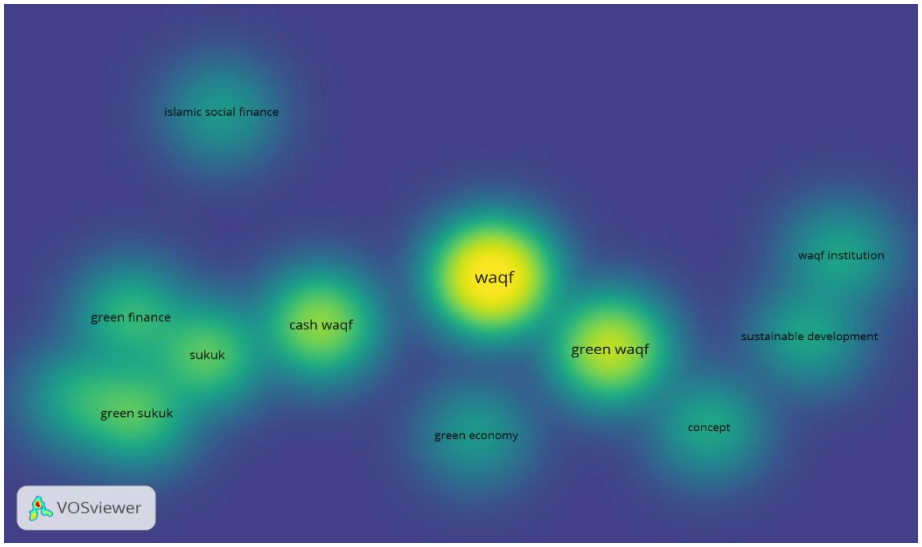


Figure 1. Co-Occurrence Bibliometric Based on Density Visualization

Waqf appears as the core topic across all publications and is the most frequently occurring term. Cash waqf emerges as the second most prominent after waqf. Green waqf, meanwhile, shows a high level of intensity, indicating that this theme is developing rapidly. Green finance, green sukuk, and the green economy have begun to be integrated with waqf, yet they do not constitute the primary focus in most studies. Topics that remain insufficiently connected to waqf include Islamic social finance, waqf institutions, sustainable development, and its conceptual foundations. This highlights the novelty of the present study, which seeks to expand and enrich the literature by integrating Islamic social finance, waqf, and the SDGs within a single research framework a field that remains relatively underexplored and underdeveloped.

ISSN
3023-5634

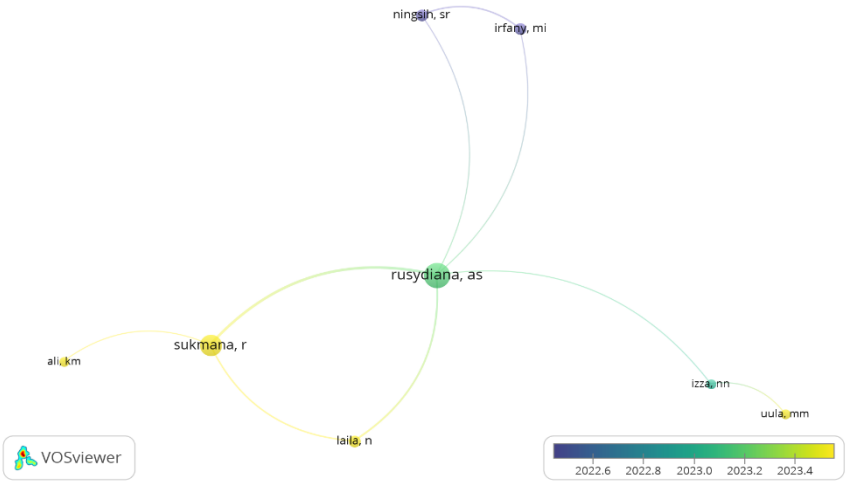


Figure 2. Co-Authorship Approach

3.1. Islamic Social Finance

Islamic social finance instruments, including zakāt (charitable giving), waqf (endowment), and ṣadaqah (voluntary contributions), can provide alternative sources of financing (Zauro et al., 2020). ISF in promoting sustainable development and achieving the United Nations Sustainable Development Goals; waqf and cash waqf; and Islamic charitable institutions (Akhter et al., 2025).

Within the Islamic economic system, the social sector plays a significant role supporting current developmental efforts. The robust growth of Islamic social finance institutions serving the asset management needs of Muslim communities in accordance with sharia law is gradually complementing Islamic financial services for all social strata in Indonesia. Islamic commercial finance is adequately serving the needs of medium and large enterprises, while Islamic social finance reaches the poorest of the poor, those languishing at the bottom of the pyramid, as well as supermicro (nano) enterprises. Therefore, zakat, infaq, sadaqah, and waqf (ZISWAF) are instruments of Islamic social finance that have a direct impact on wealth and income distribution through duafa empowerment In Islamic social finance, it is necessary to observe the circular flow of Islamic economic activity in the blue dashed line. Households produce services (work) to receive incentives in the form of wages that can be spent on the consumption of goods and services produced in the domestic market. Households with income and wealth beyond consumption needs are required to channel the excess into the financial sector for the purposes of saving, lending, or investing. Excepting those three motives, households with excess resources are obligated to pay zakat and encouraged to pay infaq, sadaqah, waqf and similar instruments to the state through Baitul Mal as social and fiscal instruments in the Islamic economy Zakat, infaq, sadaqah, and waqf (ZISWAF) boards are authorized to regulate Islamic social finance in Indonesia based on prevailing laws and regulations. In general, there are two centralized institutions that regulate ZISWAF at the national level. First, the National Amil Zakat Board (BAZNAS), which functions to plan, implement, and regulate the collection, management, distribution, and utilization of zakat, infaq, and sadaqah. Second, there is a separate institution that regulates, manages, and develops waqf assets, namely the Indonesia Waqf Board (BWI)(Juhro et al., 2025)

Islamic social finance and its potential in addressing natural disaster emergencies and advancing sustainable development goals (Al-Daihani et al., 2025). While Zakat, Waqf and Islamic microfinance have demonstrated developmental value, their environmental relevance remains underexplored (Ma & Sukmana, 2025).

ISSN
3023-5634

3.2. Green Waqf

Green Waqf is defined as the utilization of a waqf asset to support the attainment of ecological balance and sustainability, while also providing a social and economic impact for society. Green in this framework refers to the Green Growth Framework, in which expected outcomes related to sustained economic growth and inclusive and equitable growth can help achieve social economic and environmental resilience, enable healthy and productive ecosystems providing services to society, and contribute to a reduction in greenhouse gas emissions (Gol-GGGI, 2014, 2015) (BWI & UNDP, 2022)

The Indonesian Waqf Board (Badan Wakaf Indonesia) and the United Nations Development Programme (UNDP) are currently developing green waqf initiatives in Indonesia. The development of green waqf represents a response to saving the planet from environmental degradation and other social impacts. Waqf has received serious attention from the Indonesian government, including waqf dedicated to environmental purposes. Accelerating the development of waqf is expected to be achievable and to provide significant benefits for society. To expand green waqf in Indonesia—particularly in attracting prospective donors—waqf institutions must design strategies to shape donor attitudes through various activities such as public outreach and education on green waqf programs. Waqf institutions must also build public trust by involving community leaders to promote green waqf initiatives. These efforts are likely to increase the active participation of prospective donors in contributing funds to support the development of green waqf in Indonesia (Huda et al., 2025b).

Waqf can serve as a new financing method for sustainable infrastructure projects. The use of waqf in funding green infrastructure initiatives highlights a pathway toward more equitable and inclusive development strategies. (Mohamed & Akande, 2025b)

3.3. SDGs

Indonesia requires USD534.15 billion and USD322.86 billion to achieve the SDGs and climate target respectively by 2030 (Ministry of National Development Planning, 2019. Poverty reduction has historically been one of the main roles of waqf. Additionally, environmental preservation, health care, education, and infrastructure development are among the key beneficiaries of the waqf benefits. Waqf's present relevance would be confirmed if it could be used to respond quickly to the developmental needs articulated in the SDGs. (BWI & UNDP, 2022)**.** Waqf with its uniqueness and characteristics represents the Islamic teaching legacy that contributes not only to providing human welfare but also preserving nature. It is very much aligned with the discourse of the SDGs, the green economy, and green finance, and thus can be introduced as a green waqf (Abdullah, 2018; Dr Lisa Listiana et al., 2024). Promoting waqf as part of the solution to address current issues is highly relevant, especially for Indonesia as the largest Muslim country globally and as most generous country in the world according to a recent CAF report (Dr Lisa Listiana et al., 2024).

4. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

This bibliometric analysis provides a comprehensive mapping of the intellectual landscape of green waqf research within the broader framework of Islamic Social Finance (ISF). The results demonstrate a significant increase in scholarly interest from 2000 to 2025, marked by expanding publication volume, diversification of themes, and strengthening collaboration networks. The conceptual clusters identified ranging from waqf asset management, cash waqf integration, environmental sustainability, to institutional governance reflect the multidimensional nature of green waqf as both a financial and socio-environmental instrument. Importantly, the emergence of green waqf as a distinct research theme underscores its growing strategic relevance in

ISSN
3023-5634

supporting the Sustainable Development Goals (SDGs), particularly climate action, sustainable cities, and poverty alleviation. Overall, this study enriches the academic discourse by offering structured insights into how green waqf is evolving as a transformative mechanism in the pursuit of sustainable development within the Islamic financial ecosystem.

The findings reveal several critical insights into the evolution and current positioning of green waqf research. First, the dominance of themes related to waqf and cash waqf indicates that green waqf is emerging from the foundational development of waqf-based financial innovations. This suggests that the intellectual roots of green waqf are closely tied to discussions on asset optimization, governance reforms, and the modernization of traditional waqf instruments.

Second, keyword co-occurrence and clustering patterns highlight the integration of sustainability discourse within ISF scholarship. Terms such as *green sukuk, sustainable development, climate action,* and *renewable energy* increasingly intersect with *waqf*, reflecting a theoretical and practical shift toward environmentally conscious financial models.

Third, the networks of influential authors and institutions demonstrate an expanding research community with increasing interdisciplinary collaboration. Yet, the fragmented co-authorship patterns imply that the field remains in an early developmental stage, with strong potential for deeper, more systematic global partnerships.

Fourth, the analysis underscores the pivotal institutional role of waqf authorities, governments, and international agencies (e.g., UNDP, BWI) in shaping green waqf initiatives. This highlights a growing policy interest that may serve as a catalyst for future research and practical implementation.

Overall, green waqf is transitioning from a conceptual discourse into an actionable financial instrument capable of addressing climate and socio-economic challenges. However, further empirical validation, standardized frameworks, and comparative studies are needed to solidify its position within both academic and policy domains.

Based on the identified research gaps and thematic trends, future studies on green waqf should prioritize the advancement of empirical investigations to validate the practical effectiveness of existing initiatives, particularly in renewable energy, sustainable agriculture, and climate-resilience programs. There is also a strong need to develop standardized governance frameworks, Sharia-compliant investment guidelines, and environmental impact measurement tools that can enhance accountability, comparability, and credibility across green waqf practices. Cross-country comparative analyses are recommended to explore regulatory innovations and institutional best practices from countries with established waqf ecosystems such as Indonesia, Malaysia, Turkey, and the GCC region. Strengthening interdisciplinary collaboration between scholars of Islamic finance, sustainability, public policy, and environmental sciences will broaden methodological approaches and improve the theoretical robustness of the field. In addition, policymakers and waqf institutions are encouraged to integrate green waqf into national sustainability agendas, promote enabling regulations and incentives, and foster strategic partnerships with global organizations to enhance implementation capacity. Finally, further research should explore the integration of green waqf with other Islamic Social Finance instruments—including green sukuk, zakat, and waqf-linked microfinance to create a more holistic and synergistic financial ecosystem capable of accelerating progress toward the Sustainable Development Goals (SDGs).

ISSN
3023-5634

5. REFERENCES

Abdullah, M. (2018). Waqf, Sustainable Development Goals (SDGs) and maqasid al-shariah. *International Journal of Social Economics*, *45*(1), 158–172. https://doi.org/10.1108/IJSE-10-2016-0295

Akhter, A., Javed, M. Y., & Akhter, J. (2025). Research trends in the field of Islamic social finance: A bibliometric analysis from 1914 to 2022. *International Journal of Ethics and Systems*, *41*(2), 455–483. https://doi.org/10.1108/IJOES-03-2023-0044

Al-Daihani, M., Dirie, K. A., Muneem, A., Abdul Lateb, N., & Bouteraa, M. (2025). Islamic social finance and its potential in addressing natural disaster emergencies and advancing sustainable development goals: A proposed model. *International Journal of Ethics and Systems*. https://doi.org/10.1108/IJOES-05-2024-0138

Ar-Rum. (41). Al-Qur'an [Https://quran.com/30]. *Ar-Rum*. https://quran.com/30

BPS. (2024). *Angka Deforestasi (Netto) Indonesia di Dalam dan di Luar Kawasan Hutan Tahun 2013-2022* [Grafik]. BPS.

BWI, & UNDP. (2022). *Green Waqf Framework*.

Dr Lisa Listiana, Dr Syed Musa Alhabshi, & Dr Zamri Osman. (2024). ISSUES ON WAQF AND ROLES OF WAQF AUTHORITIES: EVIDENCE FROM INDONESIA AND SINGAPORE. *Hamdard Islamicus*, *47*(1). https://doi.org/10.57144/hi.v47i1.720

Huda, N., Trianto, B., Masrizal, M., & Maskuroh, N. (2025a). Intention to donate in green waqf among Muslim community: Indonesian case. *Journal of Islamic Marketing*, *16*(3), 736–758. https://doi.org/10.1108/JIMA-02-2023-0044

Huda, N., Trianto, B., Masrizal, M., & Maskuroh, N. (2025b). Intention to donate in green waqf among Muslim community: Indonesian case. *Journal of Islamic Marketing*, *16*(3), 736–758. https://doi.org/10.1108/JIMA-02-2023-0044

Juhro, S. M., Syarifuddin, F., & Sakti, A. (2025). *Inclusive Welfare: On the Role of Islamic Social-Public Finance and Monetary Economics*. Springer Nature Singapore. https://doi.org/10.1007/978-981-96-0051-9

Keskin, G., & Dağgülü, İ. B. (2025). Vakıf varlıklarının sürdürülebilir geleceği: Çevresel tasarım ve yeşil mimarlık ilkelerine dayalı bir değerlendirme modeli önerisi. *Gazi Üniversitesi Mühendislik Mimarlık Fakültesi Dergisi*, *40*(2), 761–776. https://doi.org/10.17341/gazimmfd.1405594

Listiana, L., Timur, Y. P., & Syahyuti. (2025). The Role of Islamic Endowment (Waqf) in Achieving Food Security: A Netnographic Study. *International Journal of Islamic Finance and Sustainable Development*, *17*(1). https://doi.org/10.55188/ijifsd.v17i1.956

Ma, Y., & Sukmana, R. (2025). Takeaways from Islamic social finance and sustainable development goals discourse: Review and bibliometric analysis on future directions for Zakat, *Waqf* and Islamic microfinance. *Journal of Islamic Accounting and Business Research*. https://doi.org/10.1108/JIABR-06-2024-0227

Majelis Ulama Indonesia. (2023). *Hukum Pengendalian Perubahan Iklim Global* (No. 86 Tahun 2023). MUI.

Mohamed, A., & Akande, A. E. (2025a). Waqf-led buildings and green infrastructure role in environmental sustainability: Understanding critical gaps in current research landscape. *Management & Sustainability: An Arab Review*. https://doi.org/10.1108/MSAR-09-2024-0152

ISSN
3023-5634

Mohamed, A., & Akande, A. E. (2025b). Waqf-led buildings and green infrastructure role in environmental sustainability: Understanding critical gaps in current research landscape. *Management & Sustainability: An Arab Review*. https://doi.org/10.1108/MSAR-09-2024-0152

Ninkov, A., Frank, J. R., & Maggio, L. A. (2021). Bibliometrics: Methods for studying academic publishing. *Perspectives on Medical Education*, *11*(3), 173–176. https://doi.org/10.1007/S40037-021-00695-4

Oseni, A. A., Bamiro, N. B., Ashafa, S. A., & Olohunlana, S. D. (2025). Sustainable Halal Financing Framework for Blue and Green Economy. In M. A. Salisu, L. Raimi, N. B. Bamiro, & I. O. Elegbede (Eds.), *Green and Blue Economy Frameworks for Halal Industry Sustainability* (pp. 253–273). Springer Nature Singapore. https://doi.org/10.1007/978-981-96-1729-6_14

Suwandari, Y. D., & Suratkon, A. B. (2025). Proposed Alternative Financial Model for a Water Supply Project Using Green Finance (Cash Waqf Funding). In E. M. Nia, M. Awang, M. F. N. Aulady, M. Traykova, & L. Yola (Eds.), *Selected Articles from the 8th International Conference on Architecture and Civil Engineering* (Vol. 635, pp. 900–910). Springer Nature Singapore. https://doi.org/10.1007/978-981-96-5654-7_83

Widiastuti, T., Al-shami, S. A., Mawardi, I., Zulaikha, S., Atiya, N., & Rusanti, E. (2025). Unlocking the future of green finance: A bibliometric and systematic literature review on intellectual capital and Islamic financial development. *Journal of Islamic Marketing*, 1–24. https://doi.org/10.1108/JIMA-10-2024-0461

Zauro, N. A., Saad, R. A. J., Ahmi, A., & Mohd Hussin, M. Y. (2020). Integration of Waqf towards enhancing financial inclusion and socio-economic justice in Nigeria. *International Journal of Ethics and Systems*, *36*(4), 491–505. https://doi.org/10.1108/IJOES-04-2020-0054

ISSN
3023-5634

Article Arrival Date
30.11.2025

Article Published Date
20.12.2025

Azerbaycan-Türkiye İlişkilerinin Gelişimi*

Developıng Azerbaıjan and Türkiye Relations

Sabina MALİKOVA[1], Bülent KARA[2]

[1] İğde Ömer Halisdemir Üniversitesi Sosyal Bilimler Enstitüsü Avrasya Araştırmaları Doktora Öğrencisi

[2] Prof. Dr. Niğde Ömer Halisdemir Üniversitesi İnsan ve Toplum Bilimleri Fakültesi Sosyoloji Bölümü Başkanı

Özet:

Türkiye-Azerbaycan ilişkileri, Azerbaycan- ve Türkiye'nin din, dil ve kültür orijini olarak aynı olması gerçeğinden dolayı uzun geçmişe dayalıdır. Zaman zaman aralarında gerilimli ilişkiler olsa da Azerbaycan-Türkiye İlişkileri genelde dostluk ve kardeşlik çerçevesinde olmuştur. 1990'lı yıllara kadar, uzunca bir süre SSCB'nin bir parçası olan Azerbaycan Cumhuriyeti, 1991 yılından sonra bağımsızlığını kazanmıştır ve bağımsızlığının hemen ardından Türkiye-Azerbaycan ilişkileri siyasi ve ekonomik alanda gelişmeye başlamıştır. Bu tarihi süreç sonrasında Azerbaycan ve Türkiye ilişkileri yakınlaşarak stratejik ortaklı seviyesine yükselmiştir. Bu koşullar sosyal, ekonomik ve siyasi alanda etkisini ortaya koymuş ve iki devlet ortak hareket ederek bölge siyasetini değiştirmiştir.

Türkiye-Azerbaycan ilişkileri uluslararası sistemde benzerine rastlanmayan, son derece özel ve özgün niteliğe sahiptir. Günümüzde "Bir millet iki devlet" sloganını resmi söylem ve eyleme geçirmiş olan Türkiye ve Azerbaycan arasındaki ilişkiler sadece dil, din ve soy birliğine dayanmaz. Azerbaycan-Türkiye ilişkilerinin ekonomik, sosyal, politik, kültürel ve askeri boyutları da vardır.

Bu çalışmada Azerbaycan-Türkiye ilişkileri farklı boyutlarıyla araştırılmıştır.

Anahtar Sözcükler: Azerbaycan, Türkiye, ilişkiler, uluslararası ilişkiler

Abstract:

Azerbaijan-Türkiye relations have been residing for a long time because of the fact that they have the same origin about religion, language and culture. Though tensions happened in Azerbaijan-Türkiye relations now and again, it usually based on friendship and brotherhood. Until the 1990s, the Republic of Azerbaijan, part of the USSR for a long time, gained its independence after 1991, and immediately after its independence, Turkish-Azerbaijani relations began to develop in the political and economic spheres. After this historical period Azerbaijan and Türkiye got closer and relations have reached to the level of strategic partnership. This conditions have brought up its influence in social, economic, and political sphere and these states acting together changed themselves to regional policy.

* Bu çalışma Sabina Malikova'nın Doktora Tezinden üretilmiştir.

ISSN
3023-5634

Turkey-Azerbaijan relations have an extremely special and unique character, the like of which is not found in the international system. The relations between Turkey and Azerbaijan, which have put the slogan “One nation two states” into official discourse and action today, are not based only on the unity of language, religion and ancestry. There have been economical, social, political, cultural and military dimensions of Azerbaijan and Türkiye relations.

In this study we resaerched dşfferent character of Azerbaijan and Türkiye from past to present.

Key Words: Azerbaijan, Türkiye, relations, international relations

GİRİŞ: Amaç, Kapsam, Sınırlılıklar, Materyal ve Metod

Azerbaycan ile Türkiye arasında var olan bağlar çok kuvvetlidir. Bu bağlar siyasal, sosyal, kültürel ve ekonomik temellere dayalıdır. Bundan dolayıdır ki, Azerbaycan ile Türkiye’nin birbiriyle bağlantısı çok köklü bir geçmişten ortak kadere doğru ilerleyen geleceğe doğru gelişim seyri olan niteliğe sahiptir. Bu açılardan biricik ve eşsiz olma vasfı taşımaktadır.

Tarihte Selçuklulardan başlayıp, sonra Osmanlılar-Safeviler dönemi, Cumhuriyet-Sovyet Dönemi biçiminde ilerleniş olan Azerbaycan-Türkiye ilişkileri son dönemde vites yükseltilerek stratejik ortaklık seviyesindeki bugünkü halini almıştır. Önce aynı toplumsal yapı içinde varlığını sürdüren Azerbaycan ve Türkiye ahalisi, zamanla yönetimlerin ayrı düşmesi ve düşünmesinden etkilenerek uzak kalınan bir serüven yaşamışlardır.

Petrol ve gaz kaynaklarına sahip olmanın farkıyla büyük güçlerin mücadelesinin ortasında kalan Azerbaycan, aynı güçlerle uzun dönem savaşmış Türkiye ahalisinin pek çok açıdan kaderdaşı konumunda oluyordu. Paylaşım kavgasının ortasında kalmış olan Türk Milletinin evlatları olarak güçlerini birleştirip de mücadele imkanlarının bulunmadığı uzun bir periyotta var olma mücadelesi vermişlerdir.

Sovyetler Döneminde de Azerbaycan için İkinci Dünya Savaşına kadar farklı bir yönetim anlayışı sonrası için farklı bir Sovyet Yönetimi anlayışı egemen olmuştur. İlk dönemde iç işlerinde serbest bırakılan bir Azerbaycan söz konusu iken, ikinci döneminde baskı altında tutulan bir Azerbaycan’ın varlığı söz konusu olmuştur. Türkiye için de bağımsızlık mücadelesinin her meselenin önüne geçmesi ve yalnızlık karşısında gelen Sovyet desteğinin etkisiyle Azerbaycan ile ilgilenecek bir vaziyetin olmayışı belirleyici olmuştur.

Sovyetlerin çöküşüyle beraber Azerbaycan-Türkiye ilişkileri hızlı gelişme seyri yakalamıştır. Zamanla dalgalanma aşanmış olsa da istikrarlı bir şekilde gelişip stratejik derinlik yakalamış olan ilişkiler yaşamın çok değişik alanlarda kendini çok güçlü hissettirmiştir.

Çalışmanın gelişim seyrini metodolojik olarak iki bölüme ayırmak gerekmektedir. Bu konuda köklü değişmeyi yaratan Sovyetlerin Çöküşünü milat olarak ele alıp öncesi ve sonrası biçiminde konunun izah tarzı benimsenmiştir. Buna göre birinci bölümde Sovyet Öncesi ve ikinci bölümde de Sovyet Sonrası ilişkilerin gelişimi biçiminde tasarlama yapılmıştır.

1.Sovyet Öncesi Dönemde Azerbaycan-Türkiye İlişkilerinin Gelişimi

Azerbaycan-Türkiye ilişkileri yeni olmayıp tarihsel olarak uzun bir geçmişe sahiptir. (Özdemir-Kantar, 2023.734) Hem Azerbaycan’ın hem de Türkiye’nin toplumsal yapılarının kategorik özelikleri sebebiyle birbirlerine yakın olmaları olgusu ilişkilerde de yakınlığın oluşumuna gerekçe olmuştur.

Çalışmada metodik olarak öncelikle Selçuklular, daha sonra Osmanlılar Dönemi son olarak da Cumhuriyet Dönemi İlişkileri analize tabi tutulmuştur. Türklerin Kafkasya’da bölgeye yerleşmeleri 16. yüzyıla kadar devam etmiştir. Azerbaycanlı aydınlar, son zamanlarda, Azerbaycan’ın, daha önceden Türklerin yurdu olmuş olduğu ve sonradan gelen Türklerin de

ISSN
3023-5634

bunlara karışarak yerlileşmişlerdir görüşü büyük bir yoğunlukla beyan etmektedirler. Prototürklerin, özellikle, önce Ön Asya'da yerleştiklerini ve sonra oradan Orta Asya'ya göçtüklerini düşünen aydınlar hatırı sayılı miktardadır. (Heyet, 2004:8). Bu iddialara kişisel katılan Türkiye'de de çok miktarda aydın bulunmaktadır. Bütün bu olgulara rağmen, çalışmayı Selçuklulardan itibaren başlatmanın metodik bir sınırlamanın gereği olduğunu söylemek mümkündür.

Azerbaycan'ın Selçuklu kontrolüne geçişi Sultan Alparslan döneminde gerçekleşmiş ve Azerbaycan1ın Türkleşme süreci Melikşah döneminde tamamlanmıştır. (Zeytinci, 2025:3). Azerbaycan, Selçuklular Döneminde güvenli bulunduğu için ordugah olarak kullanılmıştır. Bunun yanı sıra, konar göçer yaşam biçimine uygun bölgelere sahip olması sebebiyle Oğuzların odaklandığı yurtlardan biri olmuştur. Bundan dolayı da, Oğuzlar, stratejik olarak Azerbaycan'ı üs haline dönüştürdü.

Selçuklular, Irak ve ötesinden geri çekilmeye başlayınca, Büyük Selçukluların geride bıraktığı tortular daha küçük Türk devletlerinin oluşumunu temin etti. Selçuklu sultanlarına hizmet eden Türk komutanları kendi adlarına Ortadoğu'nun çeşitli bölgelerinde yeni bölgesel devletler kurmuşlardı. Kafkaslar, Irak, Suriye ve Filistin'in yanında Anadolu'da, bu dönemde Türk devletlerinin sayısı çok artmıştır. Böylelikle, bu, bölgede yeni durum ortaya çıkarmış ve bu yeni durum Ortadoğu'daki Türk hâkimiyetinin ikinci dönemi gelişmiştir. Bundan sonraki aşamada, Selçuklular büyük bir Türk imparatorluğu olarak tarihten çekilmiş ve yerine daha küçük ve bölgesel Türk devletlerinin hâkim olduğu yepyeni bir dönem başlamıştır. Sonrasındaysa, Osmanlı Devleti doğmuştur. (Kayhan, 2018:46).

Osmanlı Döneminde, Azerbaycan Türkleri ile Türkiye Türklerinin büyük oranda ayır sosyal sistemlerde yaşamışlardır. Azerbaycan, her dönemde büyük güçlerin mücadele alanı olmuştur. Azerbaycan'ın Osmanlı'ya bağlı olan hanlıklarında, Osmanlıları Azerbaycan'ın önemli bir kısmında egemen olan hanlıkları iç işlerinde serbest dış işlerinde Osmanlıya tabi bir hakimiyetle yönetmişlerdir. Osmanlı'nın hakimiyeti Ruslarla olan mücadelelerden sonra büük ölçüde kaybedilmiştir. Osmanlı ile rekabet halindeki Safevi Devleti'nin dağılmaya başlamasıyla, Hanlıkların Rus Güçleriyle karşılaşması söz konusu olmuştur. Osmanlı'nın güçsüzleşmesi Kafkas Bölgesinin genelinde Ruslara karşı koyabilme gücünü ortadan kaldırmıştır. Osmanlılar karşısında Azerbaycanlıların iki farklı yaklaşım biçimi belirleyici olmuştur. Bu durum iç bölgelerde Osmanlı'ya gönüllü katılım esasıyla gelişmişken, sahil bölgelerdeki ahalinin Osmanlı Paşalarımın Şia-Sünni ayrımcılığı konusundaki tutumları sebebiyle Osmanlı'ya mesafeli yaklaşımının etkisiyle Osmanlı karşıtlığının gelişimi biçiminde olmuştur. (Mustafazade, 2004:21-25).

Osmanlı Döneminde Azerbaycan topraklarında, İslam'ın yayılması ve Türk kültürünün etkisi şeklinde olmuştur. Söz konusu dönemde var olan kültürel ve dini bağlar, bölgedeki halklar arasında güçlü bir ortak kimlik duygusunun gelişimini temin etmiştir. Bu eksende, Osmanlı kimliğinin oluşumunda bürokrasi ve ilmiye sınıfı içerisindeki Şirvani, Tebrizi, Erdebili gibi isimlendirmelerin önemli katkıları olmuştur. Osmanlı Döneminde bahsedilen Azerbaycanlı bilim ve kültür insanları planlı olarak Türkiye'ye getirilmiştir. Sonuçta, bu isimlendirmeler, farklı siyasi yapılar altında varlıklarını sürdüren Azerbaycan ve Anadolu Türkleri arasındaki kültürel etkileşimin devamını sağlamıştır. (Zeytinci, 2025:3).

Osmanlı'nın ilk dönemlerindeki bu etkileşim, Osmanlı-Safevi rekabeti ile birlikte, ilişkiler hız kaybetmiştir. Osmanlı'nın Sünnilik ve Safevi Devleti'nin de Şialık politikasını benimsemesi ve birbirleriyle sıkı rekabete girmiş olmaları ahalinin de ilişkilerinin sınırlanması sonucunu yaratmıştır. Bir bakıma, bu dönemde, ilişkiler iki tarafın yönetimlerinden kaçanların göç etmesi biçiminde gelişim göstermiştir. Mezhepsel nedenlerin ilişkilerin sürekli savaş ve mücadeleye neden olduğu ifade edilse de bunun başka nedenlerinin de var olduğu olgusunu hatırlatmak

ISSN
3023-5634

gereklidir. Osmanlı-Safevi mücadelesi, gerçek anlamında, sadece Sünnî-Şiî karşıtlığından öte olan iç ve dış dinamiklerin, bölgesel çeşitliliklerin, uluslararası ittifakların ve jeopolitik kaygıların da etkisinde olan bir mücadeledir. (Küpeli, 2010:18).

Osmanlı-Safevî ilişkileri, Anadolu ve İran'ın komşuluklarıyla başlamış olup Şah İsmail'in Safevî Devleti'ni fiilen kurmasıyla yeni bir boyuta ulaşmıştır. Aralarındaki şiddetli çatışmalar ve savaşlar 16. Yüzyılın başlarından17. yüzyıl sonlarına kadar devam etmiştir. İran-Turan, iki Türk hanedanının çatışması, ticaret yollarının kontrolü gibi farklı sebepler Osmanlı-Safevî savaşlarının nedenleri olarak ifade edilmektedir. Bunlarla birlikte yaygın kanaat, Safevîlerin Şiî mezhebini devlet ideolojisi haline getirmesine karşılık Osmanlı Devleti'nin de Sünnî İslam'ı devletin resmî ideolojisine dönüştürmesi sayılmaktadır. Bu farklılıklara bağlı olarak dinî ve mezhepsel karşıtlığın bu savaşlara zemin hazırladığı yönünde görüşler hakimdir. Bundan dolayıdır ki, İslam tarihi boyunca etkili olan Sünnîlik-Şiîlik rekabeti, Osmanlı-Safevi ilişkileriyle teolojik tartışma boyutundan siyasî boyuta evrilerek müslümanları fiilî çatışmalarla tanıştırmıştır. Anadolu'da Safevîlerin etkisi ise, tarikatın kurulduğu ilk dönemlerde başlayıp Şah İsmail ile birlikte doruk noktasına erişmiştir. Şah İsmail, merkez olarak kabul ettiği Tebriz ve civarının büyük oranda Sünnî olması sebebiyle bölge halkına güvenememesi sebebiyle, büyük bir devlet olmak için ihtiyaç duyduğu insan gücünü sağlamak adına gözünü Anadolu'ya dikmiştir. Şah İsmail, Hicrî 908 (1502–1503) yılında bir mektup göndererek kendisine bağlı sufîlerin Erdebil'deki tekkeye gelmelerine izin verilmesini talep etmiş ancak bu isteği II. Bayezid tarafından reddedilmiştir. Buna rağmen halifeleri vasıtasıyla Anadolu'nun Bâtınî/heterodoks halkı arasında yaptığı propaganda faaliyetleri konar-göçer Türkmen grupları arasında karşılık bulmuştur. (Aköz-Bissembayeva, 2025:148). Osmanlı İdaresinin Safevi Şiîliğini kabul edip on iki dilimli kızıl taç ve kızıl sarık giyen ve «Kızılbaş» olarak isimlendirilen zümrelere karşı uyguladığı sert politika Osmanlı halk İslâm'ında «Sünnîlik» ve «Kızılbaşlık» olarak ikiye bölünme durumunun ortaya çıkmasına neden olmuştur. Bunun yanında, Osmanlı Yönetiminin Kızılbaşlara karşı uzun süreli takibatlar ve cezalandırmalar uygulamasının etkileri günümüzde dahi hissedilir hal almıştır. Kızılbaşların zamanla artan ölçüde dışlanma yaşamaları sonucunda devletten uzaklaşmaları kaçınılmaz olmuştu. Bu sorun, toplumda yaşanan gerçeklikten ötürü, günümüz koşullarında artık her açıdan önemli bir konu olmuştur. (Küpeli, 2010:18-19).

Osmanlı-Safevi Anlaşmazlığı, 18. Yüzyıldaki çatışma sonrası yapılan antlaşma sonrasında durağan hale gelmiştir. Kasr-ı Şirin Antlaşması ile birlikte, Osmanlı İran Yönetimi arasında uzun süreli olarak barışın egemenliği söz konusu olmuştur. İran'ın 20. Yüzyıl'da geliştirmiş olduğu yayılma politikaları ile Osmanlı'nın da Kafkasya'ya ilgisi Hanlıklara sahip çıkmak şeklinde olmuştur. Ermenilerin Birinci Dünya Savaşı sırasında ve sonrasında işgalci güçleri kullanarak Kafkaslardaki Müslüman ahali üzerine baskı kurmaya çalışarak saldırganlığa girişmeye başladıkları anlaşılmaktadır. Ermenilerin Osmanlı Devleti'nin Kafkasya'da silaha başvurmama biçimindeki iradesinin de güç alarak, saldırılarını arttırmış olduklarını söylenebiliriz. Buna bağlı olarak, Osmanlı Devleti'nin bazı tedbirler aldığı görülmüştür. Ermenilerin 5 Aralık 1917'de İmzalanan Erzincan Mütarekesi ile işgal ettikleri çoğu yerden özellikle Nahçıvan, Zengezur ve Karabağ Bölgelerinden çekilmiş olduğu bilinmektedir. Osmanlı'nın askeri yardım gönderebilmesi de ancak Azerbaycan Demokratik Cumhuriyeti'nin kurulmasıyla gerçekleşmiştir. Azerbaycan Demokratik Cumhuriyeti ile Osmanlı Devleti arasında imzalanan stratejik işbirliği anlaşması, o tarihlerde de sonraki müdahalede dayanak noktasını oluşturmuştur. (Musa, 2000:510-515).

Nuri Paşa'nın liderliğinde 1918 yılında kurulan Kafkas İslam Ordusu Bakü'de Bolşevik ve Ermeni çetelerinin oluşturduğu tehditlere karşı harekete geçerek büyük bir zafer kazanmıştır. Ordu, 16 Eylül 1918'de Bakü'ye girerek Azerbaycan halkını bu baskıdan kurtarmayı hedeflemiş ve Bakü'yü düşmandan kurtarmıştır. Bu stratejik başarı, hem Azerbaycan'ın

ISSN
3023-5634

bağımsızlık mücadelesine katkı sunmuş, hem de Türkiye-Azerbaycan kardeşlik ilişkilerinin tarihindeki önemli dönüm noktalarından biri olarak kayıtlara geçmiştir. (Zeytinci, 2025:4).

Azerbaycan Demokratik Cumhuriyeti 1918'de, kurulduğunda, Osmanlı, ilk planda, Azerbaycan'a kardeş elini uzatarak, Azerbaycan'ı Rus istilasından korumakla alakalı adımlar atmış ve sonraysa, Osmanlı'nın dış güçlerce parçalanarak, yerini Türkiye Cumhuriyeti'ne bıraktığı zaman Türkiye bir Kurtuluş Savaşı mücadelesine başlamıştır. Kurtuluş Savaşı'nda, Türkiye için diğer Türk Cumhuriyetleri gibi, Azerbaycan da Türkiye'ye yardımda bulunmuştur. 20. yüzyılın başlarında, Azerbaycan Demokratik Cumhuriyeti'nin (1918-1920) kurulması, Türkiye ve Azerbaycan arasındaki ilk resmi devlet ilişkilerinin de başlangıcı anlamına geliyordu. Bu dönem, Türkiye'de İstiklal Mücadelesinin yaşanmakta yaşandığı dönem olması sebebiyle Türkiye'nin de zor günlerini ifade etmekteydi. Sonrasındaysa, Türkiye'nin iç sorunları ve savaş sonrası toparlanma sürecini yaşıyor olması Türkiye'nin Azerbaycan ile olan ilişkilerinin gelişimini sınırlamıştır. Yeni kurulan Türk Devleti için İstiklal harbi esnasında, Rusya ile olan karşılıklı çıkar ilişkilerinin mevcudiyeti ve savaş sonrası Rusya'nın taleplerinin olması, Azerbaycan ve Türkiye için iki taraflı politika yürütülmesini zorlaştırmaktaydı. Azerbaycan ile Türkiye ilişkileri bütün bu olumsuzluklarla yürütülmeye çalışmış ve 1920'de Azerbaycan'ın Sovyetler tarafından işgal edilmesiyle de ilişkiler çok büyük oranda kesintiye uğramıştır. (Zeytinci, 2025.4).

13 Ekim 1921'de Türkiye, Azerbaycan, Gürcistan ve Ermenistan arasında Kars Antlaşması imzalanmıştır. İmzalanan bu antlaşma, Türkiye ve Sovyetler Birliği'nin Nahçıvan üzerindeki ortak garantörlük haklarını ve Nahçıvan'ın Azerbaycan'ın koruyuculuğunda özerk bir bölge statüsünde olduğu teyit ettirilmiştir. Daha sonra imzalanan Moskova Antlaşması da Nahçıvan'ın Azerbaycan'a ait olduğunu, Kars Antlaşması ise Türkiye'nin garantörlüğünü içermektedir. Böylelikle, Türkiye'nin Günümüzdeki Kafkasya Sınırları Moskova, Kars ve 2 Aralık 1920 tarihli Gümrü Antlaşmaları ile kesinleşmiştir. (Karabulut, 2021:2). 1921 Moskova ve Kars Antlaşmalarınca, Türkiye, Nahçıvan'ın Azerbaycan'da kalmasını kabul ederek bunun sonucunda da Nahçıvan'ın özerk statüsünün devamında dolaylı olarak bir güvence kaynağı olmuştur. Buna göre, Türkiye, garantör haline gelmiş olaarak Nahçıvan'ın toprak bütünlüğünü kabul etmiştir (Okyar, 2017:87).

Cumhuriyet'in ilanından önce Millî Mücadele'nin BMM Hükümeti tarafından kazanılmasıyla Osmanlı'nın bir devlet olarak yıkılması söz konusu olmuştur. Savaş sonrası otoriteyi elinde bulunduran iradenin yönetim olarak cumhuriyeti benimsemesiyle, Türkiye Cumhuriyeti olarak ilan edilmiş ve böylelikle yeni bir dönem başlamıştır. Bu dönemde, İtilaf Devletlerinin Anadolu'da ilerleyişini durdurmak düşüncesindeki Mustafa Kemal'in yerinde bir seçenek olarak Bolşeviklere yaklaşması söz konusu olmuştu. Bolşevikler için de petrol zengini Bakü'yü ele geçirmek önemliydi. Mustafa Kemal'in savaşta olması da Bolşevikler için iyi bir fırsat niteliğindeydi. (Çevikel, 2023:159). O Dönemdeki Azerbaycan Sovyeti'inin Başkanı Nerimanov ideolojik olarak Lenin'in halkların kardeşliği ideolojisini savunmaktadır. Nerimanov, Türkiye-SSCB İlişkilerinde hem Türkiye'nin emperyalistlere karşı mücadelesini desteklemek için hem de Mustafa Kemal'in borç talebimi karşılıksız yardımla çözmek için etkin rol aldı. Ayrıca, Nerimanov,, Lenin'i de Türkiye konusunda etkilemeyi başarmıştır. Nerimanov, daha sonra Stalin dönemi başladığında kendisinin ideolojik olarak hayal ettiği gelişmiş Azerbaycan'ın olmayacağını da görmüş oldu. (Korkmaz, 2021).

Türkiye'de cumhuriyetin kurularak geliştiirlen reform faaliyetleri, bir taraftan Azerbaycan halkı arasında milli kimliğin sosyo-kültürel boyutta bir ivme kazanmasını sağlamış, diğer taraftan da Sovyet Azerbaycanı'nda modernleşme hareketinin yükselişini temin etmiştir. Bunlar, Sovyetler Döneminde, Sovyet Azerbaycanı ile Türkiye arasında kültürel ilişkilerin olduğunu ortaya koymaktadır. Kültürel etkinlik başlığı altında, 26 Şubat-6 Mart 1926 tarihleri arasında, Bakü'de, Birinci Türkoloji Kurultayı organize edilmiştir. Türkoloji Kurultayı,

ISSN
3023-5634

öncelikle, Türk dili, kültürü ve tarihi ile ilgili meselelerin tartışılması adına organize edilmiştir. Bütün bunların ötesinde, toplantılar sırasında milli egemenliklerin başlıca mahiyeti ve içeriği de müzakere edilmiş ve yanı sıra, milli egemenliklerin korunmasına yönelik önlemlerin alınması için bir komisyon oluşturulmasına karar verilmiştir. Bakü'deki Türkoloji Kurultayı'nda Sovyet rejiminin hoşnut olmadığı siyasi kararların da kabul edildiği ortaya çıkmaktadır. (Cabrayilov, 2024:1355). Sovyet İdaresi'nin bu hoşnut olmadığı kurultay sebebiyle daha sonraki yıllarda ilişkilere engel koma eğilimi ortaya çıkmıştır.

1926-1937`li yıllara gelindiğinde, gerilim ve sessizlik aşaması olarak değerlendirilebilecek bir dönem yaşanmaya başlanmıştır. Bu dönemde, Türkiye'nin Azerbaycan ile siyasi ve kültürel ilişkileri Moskova'nın ve Sovyet Azerbaycanı'nı yönetenlerin tercihlerine bağlı olarak çok gerilemiştir. Sonraki dönem 1937 yılı Türkiye'de Mustafa Kemal Atatürk'ün ölümüyle neredeyse aynı zamana denk gelen Azerbaycan'da Stalinist diktatörlüğün zirve noktasına ulaştığı dönemi ifade etmektedir. Sovyetlerde, bu dönemde, "Türk ve Türkiye" bahsini açan kişilere karşı büyük baskılar, represyonlar uygulanmaktaydı. Yüzlerce Azerbaycan aydını "Pantürkist" adı altında kurşuna dizilip sürgüne gönderilmekteydi. İlave olarak, Azerbaycanlılar işkence ve zulüm de görmekteydiler. (Cabrayilov, 2024:1355-1356).

Bu baskıları Bağırlı şu şekilde beyan etmektedir: "Türkiyeli bilim adamı Seyfeddin Altaylı Halil Rıza üzerine bir yazısında yazıyor: '1988 yılında henüz Sovyetler Birliği çökmeden önce Bakü'de yazar ve şair dostum Sabir Rüstemhanlı'nın mekânında Halil Rıza'yla konuşurken öyle sözler söyledi ki, şaşırmıştım. Rahmetli öylesine doluydu ki, duygularını anlatmaya çalışırken kelimeler aciz kalıyordu ve söyledikleri de bir insanı ipe götürecek kadar aşırıydı'. O yıllarda Türkiye'den bir insanın Bakü'de olması adeta mucize olarak kabul ediliyordu. Misafiri olduğunuz insanlar için bundan daha büyük bahtiyarlık olamazdı dünyada. O vakitler Azerbaycan'da bulunmam, insanlardaki bu duyguları tasvir etmem çok zor. Türk vatandaşı olan bir kimseyi evinde misafir etmek her Azerbaycan Türkünün platonik aşkıydı. Halil Rıza ile karşılıklı oturup sohbet ederken, Türkiyeli bir kardeşiyle dertleşmenin verdiği hazzı bakışlarındaki mutluluk hallerinden hissedip ona bu duyguları yaşatmada vesile olduğumdan dolayı sonsuz derecede mutlu olmuştum. Bu duyguları bize karşılıklı olarak tattırdığı için de Yüce Tanrı'ya en derin samimiyetimle dua edip şükür etmiştim. Yüreğimde duyduğum mutluluğu ve sevinci çok istememe rağmen duvarların kulağı olur diye rahmetliye açıklamamıştım. Böylesine şahsiyetlere sahip Azerbaycan dün devlet kurmayı öğrettiği kimselere esir olamazdı, olmadı da. İnşaallah bir gün gelir yüzünün diğer kısmı da güler ve büyük bir insanlık ayıbı tarihe karışır. O günün yolcuları ne mukaddes insanlardır ya Rab" (Bağırlı, 2022:64).

Doğal kaynaklarını işletme özgürlüğe kalmayan, bununla da kalmayıp her türlü kısıtlama ile yaşamak durumunda kalan Azerbaycanlıların bu tablolardan kurtulması Sovyet Rejiminin yıkılması ile mümkün olmuştur. Ancak Azerbaycanlılar diğer Sovyet Cumhuriyetlerinden farklı olarak özgürlüklerini özgürlükleri uğruna canından vazgeçmiş şehitlerine borçlu olmuştur.

Bu aşamada Sovyetler Sonrasındaki Azerbaycan-Türkiye İlişkileri bahsine geçilebilir.

2. Sovyet Sonrası Dönemde Azerbaycan-Türkiye İlişkilerinin Gelişimi

Mihail Gorbaçov'un Sovyetler Birliği'nde liderliğe geçmesi, Sovyetlerin dünya konjonktüründen de etkilenmesiyle değişim yaşanmaya başlanmıştır. Azerbaycan'da ve doğal olarak bütün Sovyet Cumhuriyetleri genelinde bu hadiselerin derin yankıları olmuştur. O dönemde çok popüler olan Perestroyka (yeniden yapılandırma) ve glasnost (açıklık) politikaları, Azerbaycan'daki toplumsal yapıda önemli bir değişim dalgasını yaratmıştır. Sovyetler Birliği'ni oluşturan halklar, bu politikalarla, komünist ideolojiye olan bağlılıklarını sorgulama safhasına girmişlerdir. Bu sayede insanların daha özgür bir politik iklim ile

ISSN
3023-5634

yaşamlarını sürdürmeye başladıkları görülmüştür. Azerbaycan'ın milliyetçi aydınları da bu özgürlükçü iklimden etkilenmişler ve Moskova'nın Azerbaycan'daki politikalarına karşı eleştirilerini yoğunlaştırmışlardır. Bunun yanı sıra, Azerbaycanlı aydınlar, milli duruşlarını netleştirme yolunu seçmişlerdir. Azerbaycan'da icra edilen Rus adaletsizlikleri Azerbaycan'daki aydınlar ile birlikte tüm Türk dünyasındaki aydınlar tarafından ciddi olarak eleştirilmiştir. Azerbaycanlı aydınların eleştirileri toplumda bir milli uyanış süreci yaratarak direniş hareketlerinin oluşumunu sağlamıştır. Bu olaylar üzerine, Moskova Yönetimi, Azerbaycan'ın petrol ve doğalgaz kaynaklarını kontrol altında tutmak için Ermenileri kışkırtarak, Ermenilere destek sağlayarak bölgede gerilime yol açıp istikrarsızlığa neden olmuştur. Ermenilerde oluşan bu hareketlenmelerin etkisiyle, Azerbaycan Halk Cephesi (AHC), ulusal mücadeleyi sürdüren örgüt olarak mücadele başlatmıştır. Ortaya çıkan bu direniş hareketleri ahaliyi Elçibey'in liderliği etrafında birleştirmeyi temin etmiştir. Halk direnişine liderlik yapan Elçibey, Azerbaycan Halk Cephesi'ni, 16 Temmuz 1989'da resmen kurmuştur. AHC'nin kuruluşundan sonra gerçekleştirilen gösterilerde "Azertürk" ve "Türk" adıyla iki slogan öne çıkmıştır. Elçibey'in liderliğindeki AHC tarafından dile getirilen bu sloganlar Sovyet rejimi karşısında kendi öz kimliğine dönüşün çağrısı demek oluyordu. (Zeytinci, 2025:3).

Bundan sonraki dönemde Azerbaycan'ın bağımsızlığı kazanılmıştır. Ardından AHC'nin ilk kurultayında, Elçibey AHC'nin amacının "Bağımsız, Birleşik ve Demokratik Azerbaycan" inşa etmek olduğunu söyleyince, başta Rusya ve İran olmak üzere, bu hedeften rahatsızlık duyan bölge güçlerinin Ermenistan'ın arkasında birleşmeleri zor olmamıştır. Ebulfez Elçibey, Türkiye'ye gerçekleştirdiği ilk ziyaretinde "Karadeniz Ekonomik İşbirliği ve Boğazlar Beyannamesi'ni imzalamıştır. O Dönemin Başbakanı Süleyman Demirel ile çeşitli başlıklarda başka beyannameler de imzalamıştır. Elçibey, Atatürk ve Mehmet Emin Resulzade çizgisinde milliyetçi ve demokrat bir siyaseti benimsemiştir. (Çevikel, 2023:160-161).

Azerbaycan-Türkiye ilişkileri Ebulfez Elçibey ile birlikte daha yakın hale gelmiştir. Bu değişimde Elçibey'in Türkiye'ye yönelik pozitif tutumu etkili olmuştur. Türkiye Cumhuriyeti ile Azerbaycan Cumhuriyeti arasında 1992'de Ankara'da imzalanmış olan "İş birliği ve Dayanışma Anlaşması", iki devlet arasında var olan çok taraflı ilişkilerin hukuksal çerçevesini güçlendirecek alt yapıyı tesis etmiştir. Bu anlaşma, iki ülke arasındaki ilişkilerin temel dayanağını oluşturmuştur. Özellikle, daha sonraki yıllarda birlikte yapılacak işlerin dayanak noktasını bu anlaşma meydana getirmiştir. (Bayrakdar-Temür, 2024:5).

Elçibey'den sonra tecrübeli politikacı Haydar Aliyev yönetime gelmiştir. Kurt Politkacı Haydar Aliyev, stratejik hamleler ile işe başlamıştır. Bu kapsamda, öncelikle, savaşta psikolojik üstünlüğü ele geçirmiş olan Ermenistan ile barış antlaşması imzalamıştır. Bununla ülkesini siyasal istikrarsızlıktan kurtarma amacına sahip olmuştur. Haydar Aliyev'in yaptığı hamle ile ülke krizden kurtarılmıştır. Bundan sonra da bölge güçleri arasında dengeye dayalı bir siyaseti benimseyerek fark yaratılmıştır. (Özsoy, 2023:588).

Haydar Aliyev, ayrıca, Batılılarla kurduğu ilişkilerle enerjisine finans kaynağı yaratmıştır. Aliyev, Batılılar ile birlikte, Rusya ve İran'ı da dışlamayan politikalar geliştirmiştir. Bu ülkelerin güvenini kazanmakla beraber Türkiye ile de reel politik anlamda iki tarafın kazancına olacak projeler gerçekleştirmiştir. Aliyev, kendinden emin olduğunu hissettiği ilk anda da Türkiye ile "bir millet iki devlet felsefesine dayalı politika" geliştirmiştir. "Asrın Anlaşması" diye tarihe geçen antlaşmaya Türkiye'yi dahil etmek ile ilgili Haydar Aliyev'in özel çabalarının olduğu bilinmektedir.

Türkiye-Azerbaycan ilişkileri, Haydar Aliyev'in 8-11 Şubat 1994 tarihlerinde Türkiye'ye yaptığı ilk resmi ziyaret sonrasında hızlanarak olumlu yönde gelişim göstermiştir. Elbette bu durum da ikili ilişkilerin yoğunlaşmasına neden olmuştur. Bu kapsamda yapılmış olan "Asrın

ISSN
3023-5634

Anlaşması" adlı enerji anlaşması, Türkiye için önemli bir meseledir. Bu prestij anlaşması, Türkiye için hem siyasi hem ekonomik yönden kıymetli olan Bakü-Tiflis-Ceyhan ve Bakü-Tiflis-Erzurum projelerinin doğmasını temin etmiştir. (Bayrakdar-Temür, 2024:5).

Haydar Aliyev'in farkı siyasal istikrar ile sınırlı olmamıştır. Siyasal istikrar ile birlikte ekonomideki bazı getirdiği yeniliklerde de fark yaratılmıştır. Bu dönemde serbest piyasa ekonomisine geçiş ile birlikte verimli ekonomik ilişkilerin kurulması ve kalkınmanın gerçekleştirilmesi için altyapının oluşturulduğu söylenebilir. Haydar Aliyev Döneminde, ayrıca, toprak reformları, özelleştirme uygulamaları ve Azerbaycan'ın hızlı kalkınmasını sağlayan petrol stratejisini uygulamaya koymak gibi önemli iktisadi kararlar da başarılmıştır. (Yüce, 2023:148).

Babası Haydar Aliyev'den sonra iş başına gelen İlham Aliyev'in, Haydar Aliyev'in inşa etmiş olduğu politikayı sürdürmüş olduğu ve Türkiye ile mevcut olan münasebetlerin geliştirilmesi hususunda çok ciddi çaba sarf ettiği görülmüştür. İlham Aliyev'in Döneminde gerçekleştirilen enerji alanındaki projeler iki ülke arasındaki ilişkilerin gelişmesini daha ilerilere taşımıştır. Bu gelişimin doğal bir sonucu olarak da, bu projeler aracılığı ile Türkiye'nin bölgedeki konumu güçlenmiştir. (Bayrakdar-Temür, 2024:5).

Azerbaycan-Türkiye ilişkilerindeki bu yeni gelişmeler, dünyada yeni bir dönemin başlamış olduğunu ortaya koymaktadır. Bu dönemde Türk devletlerinin birbirleriyle aracısız ilişki kurabilme fırsatları ortaya çıkmıştır. Bu kapsamda, enerji projelerinin haricinde Türkiye'den Azerbaycan'a iktisadi alanda yatırımlar gerçekleştirilmiştir. BTC Projesi, Türkiye için olduğu kadar Azerbaycan için de çok büyük bir fırsattır. Azerbaycan için, petrolünün rezervlerini Avrupa'ya pazarlamada daha kolay bir yola sahip olacağı sonucu ortaya çıkacaktır. BTC Hattı pazarlamadaki Rus Tekelini kırarak bugün artık Bakü Supsa Novorossisk hattına alternatif yol olmuştur. Enerji projelerinin haricinde, Azerbaycan ile Türkiye arasında ekonomik, kültürel, sosyal alanlarda birçok önemli antlaşmalara imza atılmıştır. Hepsinin ötesinde, Azerbaycan ile Türkiye arasında 1990 sonrası imzalanan öğrenci değişimi programlarıyla Türkiye'den Azerbaycan'a öğrenciler gelip Azerbaycan'ın çeşitli Üniversitelerinde başarılı bir şekilde eğitim almışlardır. Aynı zamanda, Azerbaycan'dan da her yıl binlerce öğrenci eğitim almak için Türkiye'ye gelmiştir. İşbirliğinin farklı örnekleri olan bu projeler, Azerbaycan ve Türkiye arasında her alanda etkileşime katkıda bulunmuştur. Gerçekleştirilen bu projelerin gelecek için birer yatırım olmak gibi amacı da bulunmaktadır. Söz gelimi, Azerbaycan'dan Türkiye'ye gelen bir öğrenci, Türkiye'nin siyasal, ekonomik, sosyal ve kültürel alanlarına hâkim olacaktır. Çünkü bu ülkede yaşadığı ülkenin şartları hakkında bilgi sahibi olabilecektir. Aynı şekilde, Türkiye'den Azerbaycan'a gelen öğrencinin de Azerbaycan'ın şartlarını bilmek gibi bir farkı olacaktır. Bundan ötürü 10 yıl ya da 20 yıl sonra Azerbaycan ve Türkiye devletlerinde bu aktörler diplomasi alanına yerleştirilecekleri zaman iki devlet arasında son derece sıkı bağlarla bağlanmış bir ilişki ortaya çıkaran lobi rolüne sahip olacaklardır. Türkiye için, bu durum, sadece Azerbaycan'la bağlantılı olarak değil, diğer tüm Türk Cumhuriyetleriyle bağlantılı olan faaliyetlerini aynı biçimde geçerliliği olan bir olgu olacaktır. Doğaldır ki yetişenlerin bürokraside Türkiye'den öğrendikleriyle işleyiş göstermeleri olgusu diğer Cumhuriyetler için de geçerlidir. Bütün bunlardan daha önemlisi, bu devletler arasında ortak dil birliği projesinin gerçekleştirilebilir olması da bu sayede kolay hale gelecektir (Mededi, 2022:265-266).

Dünyada egemen olan bu yeni dönemde, Türkiye ve Azerbaycan arasındaki ilişkilerin yeniden inşası, Azerbaycan ve Türkiye'nin çıkarları açısından önemlidir. Bunun kadar her iki ülkenin yer alacağı bölgesel ve küresel stratejik denklemler açısından da önem taşımaktadır. Daha Azerbaycan'ın bağımsızlığının ilk aylarında, Türkiye'nin çeşitli nedenlere bağlı olarak Azerbaycan'ın bağımsızlığını tanıyan ilk ülkelerden biri olması, her iki ülke arasında güçlü bir dayanışma ve işbirliğinin temelini erkenden atmış olduğu anlamına gelmektedir. Ayrıca, Azerbaycan'ın uluslararası arenada tanınması ve güçlü bir dış politika stratejisi oluşturması

ISSN
3023-5634

konusunda Türkiye'nin önemli destekler temin etmesi ilişkileri güçlendiren önemli faktörlerden biri oluşmuştur. İki ülke arasında, ekonomik ilişkiler de hızlı bir şekilde gelişim göstermiştir. Özellikle enerji alanındaki büyük projeler iki ülke arasındaki ekonomik işbirliğinin simgesi haline gelmiştir. Ayrıca, bu yatırımlar, her iki ülkenin de enerji bağımsızlığını güvencesi olmuştur. Bu yönüyle bu hamleler tarihe geçecek adımlar olmuştur. Hepsinden de önemlisi, Azerbaycan'ın zengin enerji kaynakları, Türkiye'nin bölgesel enerji merkezi olma hedefini gerçekleştirmesine katkıda bulunmuş ve Türkiye'nin Avrupa'ya enerji taşıyan bir köprü olma rolünü güçlendirmiştir. Bunlarla birlikte, Azerbaycan ve Türkiye arasında var olan karşılıklı destek ve dayanışma; eğitim, kültürel değişim ve güvenlik gibi alanlarındaki çeşitli işbirliği örnekleri de aralarındaki dayanışmanın ilerlemiş olduğunu ortaya koymaktadır. Karşılıklı güven ve birbirlerinin haklarını kollama anlayışları sebebile, ilişkiler, iki ülke için de ulusal çıkarların ötesinde bir kardeşlik ve stratejik ortaklık düzeyine ulaşmıştır. Bu bağlamda Azerbaycan-Türkiye ilişkileri sadece bölgesel değil, küresel stratejik düzeyde de büyük bir öneme sahip olmuştur. Azerbaycan'ın bağımsızlığı sonrasında tesis edilen bu güçlü bağ, her iki ülkenin geleceği için temel bir dayanak noktası olmuştur. (Zeytinci, 2025:5).

Azerbaycan-Türkiye ilişkilerinin zirve noktasını son on yıllık süreç ortaya koymuştur. Bu noktada hem Türkiye'de hem de Azerbaycan'da bu gelişmeleri besleyen gerekçeler oluşmuştur. Türkiye'de karar almayı hızlandıran Cumhurbaşkanlığı Hükümet Sistemine geçilmiş olması önemli bir gerekçe olmuştur. Meselenin Azerbaycan tarafını da Cumhurbaşkanı İlham Aliyev'in siyasal ilişkiler sisteminde Türkiye'yi merkeze alan politika tarzı oluşturmaktadır. Ayrıca, iki devletin üst yönetimi olan cumhurbaşkanlarından kaynaklı olarak özellikle Elçibey ve Haydar Aliyev Dönemlerindeki antlaşmaları stratejik derinlikle stratejik işbirliği anlayışına çevirmeleri de gelişmelere yol açmıştır. Daha Sonrasında ise, karşılaşılan hadiselere ortak tedbirler alma ve işbirlikleri çerçevesinde çözümler bulma anlayışıyla 2020 sonrasındaki Karabağ Zaferi'nden olumlu sonuç çıkarılması mümkün olmuştur.

SONUÇ:

Azerbaycan ile Türkiye hem coğrafi yakınlığından dolayı hem de din, dil, etnik köken ve sosyo-kültürel bakımdan yakınlığı sebebiyle güçlü ilişkilere sahiptir. İki ülke arasındaki ilişkiler eskiye dayanmaktadır. Eski olan ilişkilerin sıkı bağlara sahip olduğu söylenebilir. Bu sıkı bağların varlığına rağmen, zaman zaman birbirine hasret kalmış ahaliye sahip bu iki devlet ve toplum, dünyanın önemli kavşak noktalarında yer almış durumdadırlar.

Tarihsel olarak analiz edildiğinde devri dalgalı bir seyre sahip olsa da, Azerbaycan-Türkiye ilişkileri zaman içerisinde sürekli gelişim göstermiştir. İlk planda aynı toplumsal yapının içinde yaşayan Azerbaycan ve Türkiye ahalisi zamanla ayrı toplumsal yapının üyesi haline dönüşmüşlerdir. Selçuklular zamanında Türkmen göçünün organizasyonu ve yerleştirilmesiyle ilgili ortak sorumluluğa sahip insan yapısı zaman içinde Osmanlı-Safevi ikilemi ile yaşayan hale mecbur kılmıştır. Daha sonra da Rus İşgali ve ardından gerçekleşen Sovyet yönetimi ile uzun süre ilişkilerde sessizlik ya da sınırlı düzeydeki ilişkilerin egemen olduğu görülmüştür.

Sovyetlerin çöküşü Azerbaycan-Türkiye ilişkilerinin seyrini hızla olumlu yöne dönüştürdüğü anlaşılmaktadır. Bağımsızlığına kavuşan Azerbaycan, Türkiye ile önce sosyo-kültürel boyutlu ilişkilerde yoğunluk yaşamış ancak zamanla bu işbirliğinin ekonomik, siyasal ve askeri boyutları ağırlık kazanmaya başlamıştır. Bu gelişim ilişkileri stratejik ortaklığa kadar götürmüştür. Bu öndeki ilişkilerde her iki ülkenin coğrafi avantajları kadar yönetimi üstlenmiş olan liderlerinin iradesi de belirleyici olmuştur.

Bağımsızlıktan sonra farklı dönemlerde farklı eğilimler ortaya çıkmış olsa da Azerbaycan-Türkiye ilişkileri genelde hep ileriye doğru gelişim seyri yakalamıştır. Elçibey öncesinde kısa

ISSN
3023-5634

süreli egemen olan hükümet bile Rus yanlısı da olsa Türkiye ile ilişkilerini iyi seviyede tutmuştur. Elçibey'în yönetiminde Türkiye ile ilişkiler en ileri seviyelere ulaşmıştır. Dünyanın diğer bölgelerindeki Türklerle de bağlantı kurulması yoluna gidilmişti. Ancak bu politikaların Rusya-İran-Ermenistan yakınlaşması ile Azerbaycan'ı zor durumda bırakacağı düşünülememişti. Ermenistan ile yapılan Birinci Karabağ Savaşı'ndaki başarısızlığı kaçınılmaz kılmıştı.

Elçibey sonrasında iş başına gelen Haydar Aliyev önce çatışmasız bir ortam için sulh sağlamak yoluna gitti. Ardından da bölgede ve uluslararası sistemde denge politikasını benimsedi. Böylelikle kısa sürede önce siyasal istikrarı sonra da ekonomik istikrarı oluşturdu. Gücünü ispatladıktan sonra Türkiye ile olan ilişkileri de daha iyi noktaya taşımaya çalıştı.

Haydar Aliyev'den sonraki Başkan İlham Aliyev babasının geliştirdiği modeli daha ileriye taşıdı. Petrolün ve doğal gazın verdiği gücü çok iyi kullanarak çok sıkı ilişkilerle dünya siyasetine dahil oldu. Türkiye ile olan ilişkileri de daha ileri seviyelere taşıdı. Artık onun döneminde Azerbaycan-Türkiye ilişkileri stratejik ortaklık seviyesine ulaşmıştı. Bu yakınlık kendini İkinci Karabağ Savaşı'ndaki dayanışmada kendini ortaya koymakla kalmadı, anı zamanda bütün Türk Dünyasına feyiz kaynağı oldu. Türk Devletleri Teşkilatının oluşumu ve geliştirilmesi bu dayanışmanın ürünü olarak takdim edilebilir. Türkiye'de de hükümetlerin tamamı Azerbaycan konusunda tavizsiz tam desteği bütün dünyaya göstermiştir. Ama son dönemdeki ilişki ve dayanışmanın güçlenmesinde Türkiye Cumhuriyeti Cumhurbaşkanı Recep Tayyip Erdoğan'ın daha güçlü destek içeren tutumu sonuç alınmasında daha etkili olmuştur denilebilir.

ISSN
3023-5634

KAYAKÇA:

Aköz, A.-Bissembayeva, L.A. (2025). "Osmanlı-Safevî İlişkileri Ve Türkistanlı Hacılar", Türk Kültürü ve Hacı Bektaş Velî Araştırma Dergisi, Güz-Eylül 2025, Sayı 115, s.145-166

Bağırlı, A. (2022). "Sovyetler Dönemi Azerbaycan Yazarlarının Epistolar Eserlerinde Türkiye", https://www.ttk.gov.tr/wp-content/uploads/2022/03/04-AygunBagirli.pdf , s.63-74.

Bayrakdar, O.K. – Temür, B. (2024). "Azerbaycan Türkiye Çok Taraflı İlişkilerine Yön Veren Dinamikler: TDT- TÜRKSOY-TÜRKPA", ANASAY 2024, Yıl 8, Sayı 30, s.1-26

Cabrayilov, M. (2024). "1920'li ve 1930'lu Yıllarda Türkiye Cumhuriyeti'nin Sovyet Azerbaycan'ına Siyasi ve Kültürel Etkisi", https://atam.gov.tr/wp-content/uploads/2024/10/Mehemmed-CABRAYILOV.pdf , s.1055-1375.

Çevikel, Ş: (2023). "Resulzade'den İlham Aliyev'e Azerbaycan-Türkiye Siyasi İlişkileri Üzerine Bir Değerlendirme", Anasay , Yıl:7, Sayı:25, s.156-171.

Heyet, C. (2004). "Azerbaycan'ın Türkleşmesi ve Azerbaycan Türkçesinin Teşekkülü", Modern Türklük Araştırmaları Dergisi Cilt 1 . Sayı 1, s.7-19.

Kayhan, H. (2018). "Azerbaycan Atabeyliğinin Kuruluşu ve Atabey İldeniz", Türkiyat Mecmuası, Cilt:28/1, s.45-65.

Korkmaz, T. (2021). Türkiye-Azerbaycan İlişkileri (1919-1938). https://ataturkansiklopedisi.gov.tr/bilgi/turkiye-azerbaycan-iliskileri-1919-1938/?pdf=3301 , Erişim Tarihi:.07.11.2025

Küpeli, Ö. (2010). "Osmanlı-Safevi Münasebetlerine Dair Türkiye'de Yapılan Çalışmalar Hakkında Birkaç Not e Bir Bibliyografya Denemesi", Tarih Okulu Ocak – Nisan Sayı VI, s.17-32.

Mededi, E. (2022). Azerbaycan "Halk Cumhuriyeti'nin Türkiye ile İlişkileri İran Tarihçiliğinde (1918-1921 yılları)", https://www.ttk.gov.tr/wp-content/uploads/2022/03/06-EynullaMedetli.pdf , s.265-279.

Musa, İ. (2000). "Azerbaycan-Osmanlı Siyasi-Askeri İlişkileri (1917-1918)", Belleten, Cilt:64, Sa.240, s.509-522.

Mustafazade, T.T. (2004). "18.YY'da Osmanlı-Azerbaycan İlişkilerinin Başlıca Merhaleleri", Karadeniz Araştırmaları Dergisi, Cilt:1Sa.1, s.21-36.

Okyar, O. (2017). "Uluslararası İlişkiler Perspektifinden Nahçıvan Üzerine Eleştirel Bir Bakış: Sorun Mu Fırsat Mı?", Ermeni Araştırmaları, (56), s.81-101.

Özdemir, M.D.-Kantar, G. (2023). "Şuşa Beyannamesi'nin Önemi ve Olası Etkileri", MANAS Sosyal Araştırmalar Dergisi, Cilt: 12 Sayı: 2, s.733-744.

Özsoy, B. (2023). "1918'den 2023'e Türkiye-Azerbaycan İlişkilerinin Askeri Boyutu", Güv. Str. Derg. 2023, 19(46), s.585-605

Yüce, M. (2023). "Bağımsızlık Sonrası Azerbaycan'ın Ekonomik Gelişim Seyri", Türk Dünyası Araştırmaları, Cilt:233, Sayı:263, s. 141