Bibliometric Analysis II

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PREFACE

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We thank all of the authors with whom we collaborated to publish their books across disciplines.

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Chapter 1

HEALTH COMMUNICATION RESEARCH: FOUR DECADES OF DEDICATION TO ENHANCING PUBLIC HEALTH

Hafize Nurgul DURMUS SENYAPAR[1]

INTRODUCTION

Health communication stands at the intersection of healthcare, public health, and communication sciences, playing a pivotal role in disseminating information, shaping health behaviors, and fostering informed decision-making (Mheidly & Fares, 2020; Anwar et al., 2023). As the global health landscape becomes increasingly complex—driven by persistent public health challenges, rapidly evolving medical technologies, and unprecedented health-related information—the ability to communicate health effectively has never been more critical (Afriyie, 2020). This study explores the breadth of health communication, providing a comprehensive analysis of its significance, evolution, core components, key challenges, and transformative impact.

At its core, health communication is both an art and a science. As an art, it facilitates interpersonal connections, enhances patient-provider interactions, and fosters public engagement, shaping how individuals perceive and respond to health information (Greco, 2020). As a science, it is rooted in communication theories, research methodologies, and data-driven strategies that optimize health information dissemination to diverse audiences (Hartley & Jarvis, 2020; Moravec et al., 2025). Beyond individual health promotion, health communication plays a pivotal role in public health, ensuring that essential messages reach the public during crises, mitigating fear, and guiding collective action (Adebiyi, 2025). It also serves as a policy instrument, influencing health decision-making at both institutional and governmental levels and addressing disparities in health literacy.

Health communication is inherently multidisciplinary, drawing upon insights from psychology, sociology, public relations, journalism, epidemiology, and

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impact of personalized communication approaches on health outcomes are emerging areas that require further exploration. Expanding research on health communication in diverse cultural and socioeconomic contexts will contribute to a more equitable and effective global health communication framework.

This study has provided a systematic and data-driven assessment of health communication research, offering a roadmap for future scholarly inquiry and practical applications. By leveraging the insights from bibliometric analysis, the field can continue to adapt, innovate, and respond to the dynamic landscape of global health challenges, ensuring that health communication remains a cornerstone of effective public health strategy and patient engagement in the years to come.

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Chapter 2

BIBLIOMETRIC MAPPING AND MODELING OF ARTICLES PUBLISHED IN WoS DATABASE ON OCCUPATIONAL HEALTH AND SAFETY IN THE CONSTRUCTION SECTOR

Hatice ÖZDEMİR[1]
Murat DAL[2]
İlhami AY[3]

INTRODUCTION

The construction sector is strategic (ILO, 2022) and complex due to its employment potential and strong linkages with other economic sectors. Its strategic nature arises from the fact that it provides jobs for many people, both skilled and unskilled, and its direct contribution to economic growth. From a macro perspective, the construction industry is a sector that directly affects more than 250 sectors and offers employment opportunities to a large number of professions (Tüzüner & Zanbak, 2022), as well as contributing to economic growth by directly affecting capital accumulation and indirectly increasing total factor productivity in the process of economic growth and development (Alper, 2017). Its complex structure includes the difficulties arising from the coordination of many stakeholders such as employers, subcontractors, public institutions, municipalities, engineers, architects, self-employed and suppliers in a long-term and ever-changing structure.

The challenging nature of the construction industry brings with it many different occupational health and safety risks for workers in the sector. It is characterized by constant changes in workflow, use of many different resources, poor working conditions, working at height, lack of regular employment, harsh

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scope of analysis. Considering these limitations, it can be recommended that future studies can make comparisons by using different databases and analyzing with different keywords.

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Chapter 3

BIBLIOMETRIC ANALYSIS OF MACHINE LEARNING AND FUZZY CONCEPTS: WEB OF SCIENCE-BASED STUDY

Feride TUĞRUL[1]
Ümit CAN[2]

INTRODUCTION

With the introduction of computers into our lives, the desire of humans to have mechanical tools do many jobs in the pre-Christian era led to the emergence of the concept of artificial intelligence (Reis, 2017). Artificial intelligence is roughly defined as the ability of a computer or a computer-controlled machine to perform tasks related to higher mental processes such as reasoning, inferring meaning, generalizing, and learning from past experiences, which are generally assumed to be human-specific qualities (Nabiyev, 2010). The foundations of artificial intelligence are formed from the disciplines of philosophy (from 428 BC to the present), mathematics (from the 8th century to the present), psychology (from 1879 to the present), computer engineering (from 1940 to the present), and linguistics (from 1957 to the present) (Russel and Norvig; 1995). Machine learning is also defined as a subset of artificial intelligence that generally tries to make high-accuracy predictions for the future by analyzing past experiences (Wang et al., 2016). Machine learning methods provide automatic learning ability and help solve complex problems accurately (Janiesch et al., 2021). These algorithms, which are also positioned as a developing sub-branch of computational algorithms, aim to mimic human intelligence by adapting to environmental inputs and learning from them. It is an essential and effective tool in today's big data world. Moreover, these techniques are effectively applied in various fields, such as pattern recognition, computer vision, aerospace engineering, finance, entertainment, computational biology, and biomedical applications (El Naqa and Murphy, 2015).

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very effective in establishing the basis of the study. In addition, there are many researchers who use bibliometric analysis regarding both the concepts studied and the concepts to be studied. This study can be expanded by examining studies in many different databases as well as the Web of Science database. In addition, there are many different bibliometric analysis methods used in this study other than the Vosviewer analysis. Bibliometric analysis can also be done using different analysis tools.

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Chapter 4

ARTIFICIAL INTELLIGENCE (AI) APPROACHES IN SUPPLIER SELECTION: A SYSTEMATIC REVIEW WITH BIBLIOMETRIC ANALYSIS

Suzan OĞUZ[1]

INTRODUCTION

The supplier selection process is a strategic process in which companies research, evaluate and contract with potential suppliers. This process is not only an operational but also a strategic decision and requires a high level of financial and human resources. This is because by working with suitable suppliers, companies expect not only cost advantages but also high quality services and sustainable relationships (Chai & Ngai, 2020). In addition, suppliers stand out as a critical element of the supply chain as they indirectly affect customer satisfaction. On the other hand, with increasing environmental and social awareness, the concepts of sustainability and resilience have become important in supply chain management; in this context, working with the right suppliers provides innovation, flexibility and strategic advantage to firms (Mirzaee & Ashtab, 2024; Khan et al., 2023).

Globalisation, which has become increasingly influential especially in recent years, has forced many industries to adapt to high-demand markets, and in this context, Industry 4.0 has moved processes to smart environments with the integration of cyber-physical systems and the Internet of Things (IoT). Industry 4.0 has transformed the value creation structure of the supply chain with trends such as digitalisation, automation, transparency, mobility and network collaboration (Resende et al., 2021). This transformation has affected not only production systems but also supplier selection processes. With the development of information and communication technologies, the integration of innovative technologies such as artificial intelligence (AI), cloud computing, big data and IoT into decision-making processes has accelerated (Çalık, 2021). These constantly developing technologies and decision-making approaches enable companies to make more informed and data-supported decisions, and in this context, decision

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of digitally adaptive decision support models that can be applied in practice. This holistic analysis of AI, big data and multi-criteria models simultaneously provides a strong framework for the future development of strategic, sustainable and resilient decision-making approaches in the field of supply chain management.

For future studies, more in-depth bibliometric analyses focusing on specific sectors are recommended. In addition, supporting the application results of decision support systems integrated with AI with case studies in future studies will provide important contributions in terms of testing the practical validity of the methods.

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Chapter 5

ACADEMIC TRENDS ON ARTIFICIAL INTELLIGENCE PRACTICES IN ARCHITECTURE: A BIBLIOMETRIC STUDY (1986-2025)

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"There are now in the world machines that think, that learn, and that create."
(Simon & Newell, 1958, p. 8)

INTRODUCTION

Digital technologies, which are rapidly developing on a global scale, are reshaping the knowledge production and application processes of many disciplines. Architecture, which is one of the fields affected by this transformation, is moving beyond traditional design approaches and developing more flexible, data-driven and user-centered methods with artificial intelligence (AI)-supported solutions. Especially in the 21st century, increasing cognitive computing power, concepts such as big data analytics, machine learning and algorithmic design have opened the door to new possibilities in architectural practice. In this context, it is seen that AI technologies are increasingly finding research and application areas in the discipline of architecture.

Artificial intelligence offers innovative contributions at various stages of architectural design —from pre-design to performance analysis, from simulation to building optimization—and has the potential to produce solutions to multidimensional problems such as sustainability, energy efficiency and user interaction. These technological developments are evident not only in the practical

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As a result, it is seen that artificial intelligence technologies are no longer just supporting tools in the discipline of architecture, but rather an element that radically transforms design methods and ways of thinking. In order to direct this transformation in a healthy and sustainable way, it is of great importance to integrate technological developments with a human-centered design approach.

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Chapter 6

ARTIFICIAL INTELLIGENCE IN POST-DISASTER DAMAGE ASSESSMENT OF THE BUILT ENVIRONMENT: A BIBLIOMETRIC ANALYSIS

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INTRODUCTION

Natural disasters are geophysical and environmental events that occur unexpectedly, grow rapidly, and cannot be controlled by human intervention; they have devastating consequences on human life and the built environment. Disasters such as earthquakes, fires, and floods cause loss of life and severely affect urban infrastructures, causing significant economic losses, disruption of social structures, and long-term recovery processes (Santos-Reyes & Beard, 2010). Recent disasters have demonstrated how high the risk is on an international scale. On February 6, 2023, two high-intensity earthquakes on the border between Turkey and Syria, with the epicenter in Kahramanmaraş, resulted in the loss of over 50,000 lives and the collapse of many buildings (AFAD, 2023). In 2025, a 7.7 magnitude earthquake in Myanmar caused damage to structures and infrastructure, in rural and urban settlements (USGS, 2025). Hurricane Ian, which hit Florida, USA, in 2022, caused costly damages, while large-scale forest fires in Greece and Canada in 2023 severely threatened natural habitats and residential areas (Rahman & Zhu, 2024). Finally, in January 2025, the fire in California, USA, raged out of control for days, destroying more than 150 km2 of land and causing the destruction of thousands of structures.

The human factor has almost no effect on the occurrence of natural disasters. However, the rapid renewal of built environments is critical for improving life after a disaster and for people to reach pre-disaster living standards. In order to determine the level of transformation needed for built environments, post-disaster damage assessment studies should be carried out efficiently, accurately, and quickly. Post-disaster structural damage analyses are strategically important

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supported by multi-layered artificial intelligence solutions, and directly contributes to disaster management processes.

The increasing use of artificial intelligence techniques in post-disaster building damage assessment reveals that the research field is open to development with theoretical and applied techniques. Studies show that different artificial intelligence approaches, such as deep learning, machine learning, natural language processing (NLP), and image processing, have been integrated with various data sources, such as remote sensing, aerial imagery, 3D point clouds, and textual descriptions. Future studies should not only focus on detecting structural damages but also expand their scope to contribute to the strategic planning of response priorities, effective allocation of resources, estimation of economic losses, and reconstruction processes. While most studies have focused on post-earthquake damages, developing adaptive and generalizable artificial intelligence models for different disaster types and spatial contexts will increase the scalability and applicability of the systems in the field. As a result, AI-supported post-disaster damage assessment studies are not limited to rapid and accurate information generation and provide a scientific basis for more resilient settlements and sustainable disaster management strategies.

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Chapter 7

THE BIBLIOMETRIC ANALYSIS OF SCATTERING THEORY IN MATHEMATICS

Özge AKÇAY[1]

INTRODUCTION

Bibliometric analysis is a method that allows the numerical examination of academic publications produced by individuals or institutions in a particular field and the relationships between these publications.

Bibliometric analysis is used to see which topics are popular in a particular field, to identify the most influential studies and authors, to evaluate scientific performance, to reveal collaborations of researchers or institutions, and to examine the journals that contribute most to the field. In recent years, much research has been done in this field and continues to be done. These studies in the field of bibliometric analysis contribute to the advancement of academic people and institutions in their research fields (Akçay, 2025; Ay ve ark., 2024; Ay, Tekin & Dal, 2024; Ay, 2024; Burkut & Dal, 2023; Dal, Burkut & Karataş, 2023; Tekin, Ay& Dal, 2024).

In order to better interpret the bibliometric analysis of scattering theory in mathematics, it is necessary to first give information about scattering theory in the mathematical literature. Scattering theory studies the change in direction of subatomic particles as a result of their interactions with other particles. Basically, it describes a process that occurs when a particle hits a target particle and transfers energy and momentum. For example, scattering theory is used in topics such as the design of nuclear weapons and the operation of nuclear reactors. Scattering theory is related to quantum mechanics and quantum scattering theory provides a complete understanding of the scattering process of particles. Experiments conducted for this purpose provide information about the trajectories and properties of particles. This information helps us to increase our understanding, especially about the behavior of atomic nuclei and subatomic particles. In

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field. it is seen that the country with the most publications in this field is the USA with 475 publications. It has been observed that the most publications on this subject were made in the journal "Journal of Functional Analysis". Between 1975 and 2025, in other words, in a 50-year period, 1757 publications have been made in this subject. Studies on the scattering theory in the field of mathematics are up-to-date and studies in this field continue to progress. In this study, the publications in the subject are limited by taking them from the Web of Science database. For different studies, studies can be analyzed using databases such as Scopus and Google Scholar.

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Chapter 8

RESEARCH ON PARTICIPATIVE LEADERSHIP: A BIBLIOMETRIC ANALYSIS BETWEEN 1992 AND 2024

Nevra BAKER[1]

INTRODUCTION

This study aims to analyze the past 32 years of participative leadership research, starting from 1992, when the first article on participative leadership by Yetton and Crawford (1992) appeared in Decision-Making and Leadership, until 2024. The author has aimed at carrying out a bibliometric analysis of participative leadership, since a significant amount of her earlier studies has contributed to literature on leadership (e.g. Baker, 2018a; Baker, 2018b; Baker, 2019a, 2019b, 2019c; Baker, 2020; Baker, 2022; Baker, 2023a; Baker, 2023b; Baker, 2023c).

The first article on participative leadership is written by Yetton and Crawford (1992) with the title "Reassessment of participative decision-making: A case of too much participation". Starting with this study, much research has contributed to the literature on participative leadership. The ten most global cited articles on participative leadership are listed below, and their findings are summarized.

The most global cited article on participative leadership by Arnold, Arad, Rhoades, and Drasgow (2000) was published in the Journal of Organizational Behavior. This study describes the construction and empirical evaluation of a new scale for measuring empowering leader behavior.

The second most global cited article on participative leadership in the Web of Science was written by De Jong and Den Hartog (2010) and appeared in Creativity and Innovation Management. In the article, the authors developed a measure of innovative work behavior with four potential dimensions: the exploration, generation, championing and implementation of ideas.

Study by Somech (2006), published in the Journal of Management, is listed as the third most global cited article on participative leadership in the Web of Science

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Chapter 9

MAPPING SCIENTIFIC RESEARCH ON CIRCULAR ECONOMY AND LIFE CYCLE ASSESSMENT IN THE BUILT ENVIRONMENT

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INTRODUCTION

Climate change is one of the greatest environmental threats facing today's societies and creates significant obstacles to achieving sustainable development goals. The global population is predicted to reach approximately 10 billion by 2050, and two-thirds of this population will live in urban areas (OECD, 2012; United Nations, 2014).

Rapid population growth and urbanization cause the built environment, created by the construction sector, to assume a central role in meeting infrastructure and service demands. However, due to the linear production model based on "take-make-dispose" that is still widespread, the sector creates environmental pressures such as high energy consumption, excessive use of natural resources, and waste production (Benachio et al., 2020). Current data reveal that the built environment accounts for approximately 36% of global energy use and 38% of CO_2 emissions (International Energy Agency, 2019). In this context, adopting sustainable approaches to increase resource efficiency and reduce greenhouse gas emissions in the construction sector has become inevitable. At this point, circular economy (CI) offers an innovative and systematic solution proposal to achieve sustainability in the construction sector. CCI is based on fundamental principles such as optimizing resource use, preserving the value of materials and products throughout their life cycles, minimizing waste generation, and reproducing natural systems (Ellen MacArthur Foundation, 2013). By separating economic growth from environmental pressures, this approach reduces environmental degradation

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numerical trends and the evolution of the research agenda over time, collaboration networks, the most contributing authors and institutions, key concepts, and emerging thematic focuses. In this respect, the study systematically classifies the existing knowledge in the field and maps the development dynamics related to the field.

The findings show that the integration of LCA and CE provides significant contributions in terms of environmental sustainability and multidimensional areas such as the protection of economic value chains, increasing resource efficiency, and social impact generation. LCA-based measurement approaches are observed to be integrated with CE principles, especially in reducing the environmental impacts of construction and demolition processes and disseminating recycling and reuse strategies.

In this direction, addressing LCA and CE together is considered a strategic tool to achieve sustainability goals in the construction sector. In future research, it is important to address these two approaches in a more refined and practical way with emerging themes such as "embodied carbon", "climate change", "urban mining" and "digitalization". At the same time, encouraging interdisciplinary approaches will increase the scientific depth of this field and strengthen its impact at the policy and practice level.

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