

Evaluation of the Quality of Scientific Research on Maritime Transportation and Logistics: The Case of Azerbaijan

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Abstract— This study aims to evaluate the quality of scientific research in maritime transportation and logistics in Azerbaijan. The research examines the general trends, methodologies, and key topics of studies conducted in this field in Azerbaijan. Additionally, national and international sources, research level, and publication distribution are analyzed as part of a broader quality assurance assessment. In parallel with the growing potential of the maritime transportation and logistics sector in Azerbaijan, the necessity of improving the quality of scientific output in this field is emphasized. The study presents recommendations such as strengthening research methodologies, fostering national and international collaborations, increasing applied research, and enhancing data accessibility to ensure quality assurance in academic contributions. Consequently, it is argued that strategic steps should be taken to enhance the quality and impact of scientific research in maritime transportation and logistics, making it more efficient and aligned with international standards in Azerbaijan.

Keywords—Azerbaijan, maritime transportation, logistics, quality, quality assurance.

I. INTRODUCTION

Maritime transportation and logistics play a crucial role in fostering economic relations and trade exchanges between countries worldwide. The Strategic Roadmap for the Development of Logistics and Trade in Azerbaijan has set a long-term vision aimed at significantly improving logistics and trade infrastructure by 2025. Additionally, the primary objective beyond 2025 is the efficient management of logistics and trade centers with strong connections across the country [4].

One of the most significant projects in this domain is the Alat Project, which is considered Azerbaijan's greatest advantage in becoming a regional logistics hub. The project consists of the Alat International Sea Port, the Alat Free Trade Zone, and the broader Alat International Logistics Center. This project will enhance Azerbaijan's role in both the East-West and North-South trade corridors. Once completed, it is expected to significantly reduce transportation costs, provide time advantages, and improve service quality [5]. These projects will also contribute significantly to Azerbaijan's Logistics Performance Index.

Despite the growing strategic importance of maritime transportation and logistics, these fields remain under-

researched in Azerbaijan. Currently, only a limited number of studies focus on this topic, and most of them are constrained in terms of scope and analytical depth. However, given the increasing interest in the development of Azerbaijan's transportation infrastructure and maritime sector, research in this field is expected to expand and deepen.

Scientific research in maritime transportation and logistics plays a fundamental role in the development of transportation infrastructure and port services. The Port of Baku is a strategically important hub in the Caspian region and serves as a critical junction for international trade routes. Therefore, the impact of scientific research on the development of the Port of Baku and the formation of future strategies demands special attention.

II. QUALITY ASSESSMENT OF SCIENTIFIC RESEARCH

The assessment of scientific research quality in maritime transportation and logistics is based on four key aspects:

1. Infrastructure and Modernization – Studies related to port expansion and digitalization contribute to enhancing the efficiency of transportation flows.
2. International Relations and Logistics Corridors – The Port of Baku serves as a central hub in studies related to the East-West and North-South transport corridors.
3. Economic and Environmental Impacts – Research on port development addresses economic growth and ecological sustainability.
4. Digital and Innovative Solutions – The implementation of new technologies, automation, and AI-based solutions in the Port of Baku influences both the quality and practical significance of research.

Scientific research in maritime transportation and logistics is crucial for the development of this sector and its competitiveness at both national and international levels. Globally, maritime transportation serves as a pillar of international trade, and its effective management depends directly on the level of scientific research conducted in this domain. In this context, Azerbaijan's strategic position in the Caspian region and its transit capabilities are key advantages. Large-scale projects such as the Baku International Sea Trade Port and the Trans-Caspian International Transport Route

(TITR) further increase the significance of Azerbaijan's maritime sector, making the evaluation of scientific research quality in this field even more relevant.

III. CURRENT STATUS OF SCIENTIFIC RESEARCH IN MARITIME TRANSPORTATION AND LOGISTICS

A comprehensive review of scientific research conducted in Azerbaijan in the field of maritime transportation and logistics between 2000 and 2024 reveals an evolving landscape. Although the initial literature screening aimed to cover studies from 2000 onwards, the available works primarily span the period from 2009 to 2024.

An analysis of the annual distribution of publications indicates that only one study was published in both 2008 and 2009. Between 2011 and 2018, the number of publications remained relatively low. However, a significant increase in the number of studies has been observed since 2016. This surge in research activity correlates with the establishment of the Azerbaijan Transit Freight Coordination Council in 2015 and the formulation of the Strategic Roadmap for the Development of Logistics and Trade in Azerbaijan in 2016. These initiatives have led to important developments in the logistics sector, contributing to a rising interest in academic research. The highest number of publications was recorded in 2020, with 36 studies published that year.

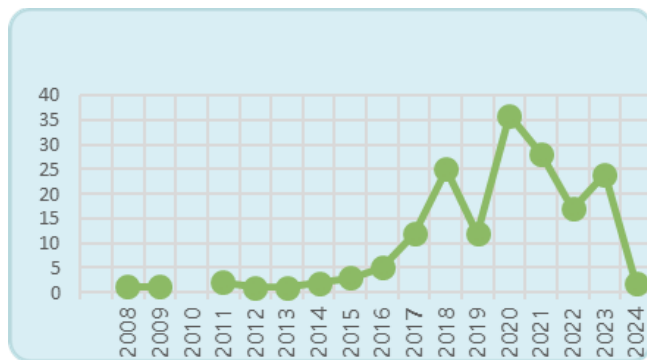


Fig. 1. Distribution of studies by year.

A. Research Focus Areas

The predominant themes in maritime transportation and logistics research in Azerbaijan include:

- Logistics and supply chain management
- The role of the Port of Baku in regional trade
- The transit potential of the Caspian Sea
- Development of international transportation corridors

In addition to summarizing research content, keyword analysis is used to identify the most frequently discussed concepts in the academic literature. A word cloud analysis was generated to highlight the most commonly used terms in maritime and logistics research [7]. This technique provides insights into the dominant themes in published studies.

To conduct this analysis, Google Scholar, Dergi Park, the National Thesis Center of Turkey's Higher Education Council (YÖK), and the websites of Azerbaijani universities were examined. Publications containing the keywords "logistics" and/or "maritime transportation" in their titles or abstracts were filtered, resulting in a dataset of 172 studies. The search

and data collection process were completed on February 15, 2024. The distribution of articles published during the examined period in terms of logistics and maritime transportation is presented in Table 1.

TABLE I. DISTRIBUTION OF ARTICLES AND THESES BY LOGISTICS AND MARITIME TRANSPORTATION TOPICS

Article Topic	Number of Articles	Percentage
Logistics	117	67.31
Maritime Transportation	55	32.69
Total	172	100

An analysis of the keywords used in studies on maritime transportation and logistics in Azerbaijan indicates that the most frequently occurring terms are "Logistics," followed by "Transportation," "Maritime Transport," "Baku Port," and "Transit."



Fig. 2. Word Cloud

B. Access to International Publications

Most academic studies in maritime transportation and logistics in Azerbaijan are published in local academic journals. However, the number of studies appearing in internationally indexed journals remains limited.

An examination of the distribution of publications by journal type indicates that:

- 34% of studies (51 articles) were published in academic journals.
- 66% of studies were presented at conferences.

Among the international journals, the highest number of Azerbaijani studies have been published in Caucasus International, Colloquium-Journal, Scientific Collection "Interconf", International Scientific Journal "Internauka", International Journal of Innovative Technologies in Economy, and IJTPE Journal. Each of these journals has published two studies (3.92% of total publications), while other journals account for 1.96% of all articles.

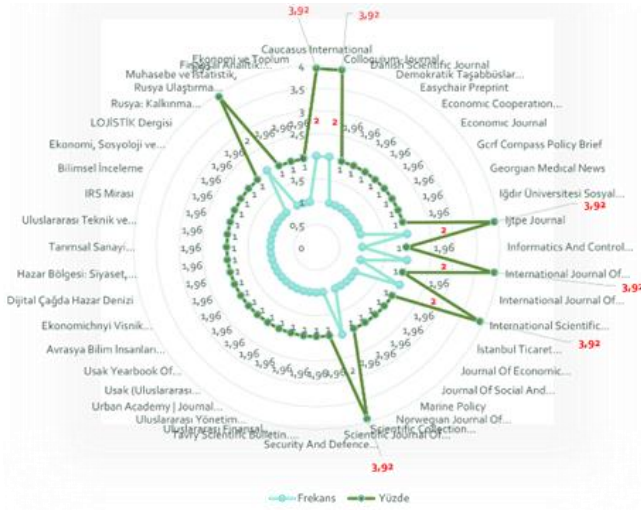


Fig. 3. Distribution of Articles According to the Journal in Which They Were Published

Methodological Methods: Most research is generally theoretical in nature, with little room for applied analysis.

As seen in Fig 4, it is seen that the "qualitative" research method is used the most in the articles. A methodological assessment of 172 studies reveals that:

- 93% of studies (142 articles) utilized qualitative research methods.
- 7% of studies (30 articles) employed quantitative research methods.

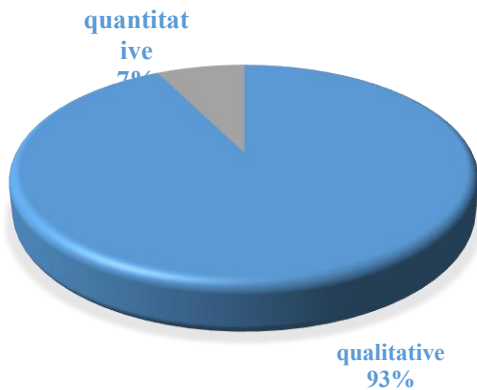


Fig. 4. Distribution according to research method

C. Analysis of the Number of Authors in Scientific Research Works on Maritime Transport and Logistics

The number of authors in a scientific study is an important indicator of research collaboration, multidisciplinary approaches, and scientific productivity. An analysis of authorship trends in maritime transportation and logistics research in Azerbaijan provides valuable insights into the level of academic cooperation in this field.

The distribution of the studies examined within the scope of the research according to the number of authors is shown in Graph 4. 172 studies reveal the following distribution of authorship:

- 66% (115 studies) were single-author publications.
- 24% (42 studies) had two authors.

- 6% (10 studies) involved three authors.
- 3% (5 studies) were co-authored by four researchers.
- 1% (1 study) had five authors.

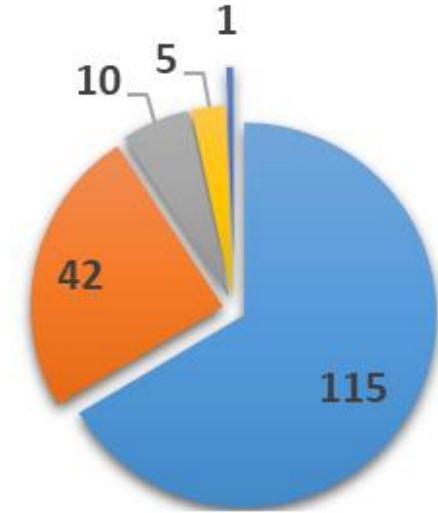


Fig. 5. Distribution by number of studies

D. Fewer works by two or more authors

This indicates the need to enhance the level of academic collaboration in Azerbaijan and suggests that it is still in the developmental stage compared to international trends. At the global level, research in the field of transportation and logistics is typically conducted with the participation of experts from various disciplines. However, the scarcity of multi-author studies in Azerbaijan presents a potential limitation to the development of the field.

Furthermore, an analysis of authorship distribution also examines the proportion of local and international contributors in the reviewed studies. The findings indicate that 12% of studies in this field included contributions from international authors.

IV. IMPACT OF AUTHORSHIP ON QUALITY ASSURANCE

One of the key indicators for assessing the quality of scientific research is the number and quality of citations used in academic articles. The citation count provides insight into the depth of research, scientific validity, and its connection to other studies.

An analysis of the number of references cited in the reviewed studies shows that the most common citation range falls between 10 and <20 references, as observed in 54 studies.

TABLE II. DISTRIBUTION OF CITATION COUNTS

Number of References	Research
1 ile < 10	79
10 ile < 20	54
20 ile < 50	27
50 ile < 150	9
≥ 150	3

Furthermore, the classification of cited sources distinguishes between national and international references, allowing for a detailed examination of the scope of referenced materials. As shown in Table 3, the most frequent range for national references is 10 to <20 sources (15 studies), while 106

studies used between 1 and 10 national references. Notably, 36 studies did not include any national references.

TABLE III. DISTRIBUTION OF NATIONAL REFERENCES IN CITATIONS

Number of citations	Research
1 ile < 10	106
10 ile < 20	15
20 ile < 40	11
≥ 60	4
yok	36

Further analysis of local vs. international references shows that many studies have insufficient engagement with international literature. Enhancing access to global academic resources and encouraging researchers to cite and engage with international studies could improve the overall quality and recognition of Azerbaijani maritime and logistics research.

V. CONCLUSION

In recent years, there has been a noticeable increase in scientific research on maritime transportation and logistics in Azerbaijan. This growth is directly related to the country's increasing transit potential and its strengthening role in international trade corridors. However, despite the rise in research activity, several challenges remain.

A significant portion of the existing studies focuses on theoretical aspects, while methodological approaches and empirical analyses remain underdeveloped. The limited number of comparative studies restricts the effectiveness of research findings, and the low citation rate of Azerbaijani studies in international academia reflects a lack of global engagement. This can be attributed to the fact that most studies are published in local journals with restricted access to international indexing databases.

Furthermore, research findings are not widely implemented by government institutions or the private sector. The primary reasons for this include:

1. Low adaptability of scientific studies to real-world applications.
2. Weak collaboration between academia and the industry.

To improve the quality and impact of maritime transportation and logistics research in Azerbaijan, the following strategic steps are recommended:

A. Strengthening International Collaborations

- Encouraging joint research projects with foreign universities and institutions.
- Expanding participation in international conferences and scientific forums.
- Facilitating academic exchange programs for researchers in the field.

B. Increasing Practical and Applied Research

- Encouraging empirical studies with real-world applications.

- Promoting data-driven research and the use of quantitative methodologies.
- Establishing collaborations between academia and the logistics industry.

C. Enhancing Data Accessibility and Sharing

- Expanding access to national and international logistics databases.
- Encouraging open-access research initiatives in the field.

D. Developing Human Capital and Education

- Introducing specialized educational programs in maritime transportation and logistics.
- Increasing research funding for doctoral and postdoctoral studies in the field.

E. Government Support for Research Programs

- Launching state-funded research initiatives in maritime logistics.
- Providing grants and scholarships for researchers in transportation and logistics.

F. Integration of Digitalization and Technological Innovations

- Encouraging the adoption of smart technologies, automation, and AI-driven solutions in maritime logistics.
- Conducting research on blockchain applications, real-time data analytics, and predictive modeling in the field.

Implementing these strategic measures will enhance the quality of scientific research on maritime transportation and logistics in Azerbaijan and contribute to the sustainable growth of the sector. By fostering international cooperation, methodological advancements, and practical applications, Azerbaijan can position itself as a leading research hub in logistics and maritime studies within the Caspian region.

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