



# A STUDY ON RELATIONSHIP BETWEEN TRANSPORT INFRA AND ITS IMPACT ON EASE OF TRADE

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## Abstract

The study investigates the role of transport infrastructure and quality of institutions on trade. The findings therefore suggest the need for additional investment in transport related infrastructure and improvement in quality of institutions. The subject of research involves the analysis of the mutual relations existing between the countries' transport systems and logistics areas of the selected EU countries. Such an analysis, giving the possibility to compare countries' transport system, creates at the same time the opportunity to identify their competitive advantages in the transport sector and in the sphere of logistics. Green logistics is the part of the activities of an enterprise aimed at measuring and minimizing the impact of logistics activities on the environment. Such actions are dictated by the possibility of achieving a competitive advantage in the market, because clients require it. Transport is a particularly important area with a huge impact on the environment. The trade-off concept can be used for several landlocked transport corridors to achieve a competitive edge in transit trade.

## Introduction:

Globalisation has transformed many economies, and some authors have heralded the "Flat Earth" epoch (Friedman 2005). International economic interactions, however, remain minor in comparison to interactions within national borders. Trade is stifled by distance, borders, and a variety of political and cultural barriers. Although integration into the global economy is widely regarded as one of the most important factors underlying the success of the world's fastest growing economies (Growth Commission, 2008), many countries remain isolated and have failed to achieve this integration. Transportation costs are just one example. (Barstow, 2022)

The rise in global trade is a well-documented phenomenon, with total exports of goods and services rising from 13% of global GDP in 1970 to 27% in 2005. 2008b (World Bank). Following rounds of trade liberalisation, first under the General Agreement on Tariffs and Trade (GATT), then under the World Trade Organization (WTO), deeper and broader tariff reductions have occurred. However, as tariff reduction and reform have entered increasingly sensitive areas, resulting in longer and more contentious negotiations, focus has shifted to trade rule reform. Even as tariff reductions stalled, harmonisation and simplification were identified as potential sources of gains. (Homlet, 2022)

Critical infrastructure networks that are vulnerable to cascading disruptions and other specific phenomena. These latter disruptive events are caused by internal aspects of complex systems as well as external shocks, resulting in effect transfer and escalation. There can be no discussion of CIP without mentioning the concept of resilience, which is defined as "the ability to prepare for, absorb, recover from, and more successfully adapt to adverse events". There are emerging issues with complexity in interdependent infrastructure systems. (Kaiser, 2022)

The various rates of globalisation observed at the time of the Fourth Industrial Revolution, stimulated by economic deregulation and liberalisation of all types of markets, particularly capital and freight markets, have a significant impact on transport markets by creating new perspectives of both global and regional transport areas. This field has been strongly entrenched in the global logistics system within the framework of common logistics standards for handling the flow of goods and the creation of global smart supply chains and networks. (Braddon, 2019)

Trade liberalisation is intended to reduce both quantitative and qualitative trade obstacles. While tariffs have been significantly reduced in recent years, a variety of subtle and harsh barriers to trade persist. Soft barriers are associated with policies or laws and can be overcome through trade facilitation initiatives. Hard obstacles are associated with infrastructure and other physical hurdles, and are typically resolved through transportation facilitation methods. Transport infrastructure and institutional quality are not only important predictors of a country's export levels, but also of its export likelihood. (Rubínová & Sebti, 2021)

## Literature Review

In the literature, the gravity model has been extensively utilised to quantify the impact of various trade cost drivers on trade flows (Anderson and van Wincoop, 2004). In this chapter, we summarise studies that give reason for our choice of variables that explain trade costs. (2022, James Ochieng)

Contracting frictions and transaction costs rise in tandem with cultural and legal system differences. Access to affordable ICT services improves information access, reduces transaction and communication costs, and increases the efficiency of services that support international trade (such as transport, logistics, and finance). (Doctor of Educational Sciences, Katarina Akerc Zadavec, 2022)

Logistics is a component of supply chain management that is responsible for planning, controlling, and storing products, services, and information from point of origin to point of consumption in order to meet consumer demands. (Ghent, 2017)

The quality of a country's infrastructure influences its economy. In essence, high-quality infrastructure allows the logistics sector to plan, control, and store products, services, and information related to purchasing raw materials to manufacturing finished products in order to meet consumer demand. (2022 Kaiser)

Green logistics services are a key component of trading organisations' growth and competitiveness since they rely on employees' knowledge and ability to evaluate the entire system and deliver competitive benefits such as higher market value, optimised cash flows, and lower expenses. (2019, Georgescu)

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By providing transportation, telecommunication network systems, import taxes, and other services, infrastructure can help boost communication among supply chain actors. (2018 Benites-Lazaro)

Transport costs are a significant non-tariff trade barrier, with the effective rate of protection exceeding artificially induced safeguards. (Rubnová & Sebti, 2021)

Economic growth is a primary driver of global development, and GDP per capita serves as a "yardstick" for gauging progress. Rural transportation infrastructure is an important driver of economic growth and development because it facilitates market access. (2022, Barstow)

Wide access to competitive ICT services enhances information access, decreases transaction and communication costs, and boosts the efficiency of services that support international trade. (2019, Braddon)

The transport system is a system that encompasses mutually connected transport sub-systems that operate within the current technical infrastructure that is critical to this sector of network industries. (Shepherd 2021)

In terms of global development, economic growth has long been regarded as a primary predictor of people's quality of life. (Feder, 2021)

Export logistics infrastructure is a network of services that promotes exports by facilitating physical movement of commodities, cross-border trade, and intra-border trade. (2022 Olyanga)

Planning, funding, maintenance, and regulation are all required for rural transportation infrastructure and services, which must be integrated through transportation-specific policy and governance at the local, national, regional, or international levels. (2022 Kaiser)

Physical access has repeatedly been identified as one of the most critical components of global healthcare access. According to the literature, a lack of physical access is still a major factor in lesser utilisation of healthcare services, which leads to negative health consequences. (2021, Jorge-Gil)

Organizing, receiving, recording, and delivering goods shipments are all part of shipping preparations. According to a survey, international shipments rate the ease with which they can plan shipments at competitive prices. (2021 Marques)

In an ever-changing market setting, quality and transportation infrastructure are especially important in expanding trade operations through administrative customs activities. (Ashley 2022)

## **Bibliometric Analysis**

Bibliometric analysis assesses and forecasts current and future research directions using statistical and other measurement methods (Yu, 2017). As a result, bibliometrics can be used to uncover patterns in the field of employee turnover. To analyse published data in terms of the text and details about the author, affiliation, co-citation, citations, and keywords used, a collection of methods known as "bibliometrics" is used. 2000 (Norton). The use of bibliometric analysis as an evaluation method assists in determining the relationship and influence that technology has on an author's productivity and charts the evolution of research activity over time. VOSviewer. The scientific community can use Vosviewer without charge. Using this programme, author and journal maps are produced (Vosviewer, 2023).

## **Methodology**

Although the concept of the transport infra and impact of trade are widely discussed in the literature, the bibliometric perspective of this approach is not adequately addressed. As a result, exploratory research was carried out to fill the gap identified by the literature review. Furthermore, this research will aid in the advancement of knowledge on this subject.

## **Research Objectives:**

- By presenting new knowledge, the study attempted to add knowledge to the subject of relationships between transport infra and impact of trade.
- To identify the most significant journals in Scopus on " The plan outlined the construction of 12 trunk highway roads, including five longitudinal roads and seven latitudinal roads. ".
- To identify the most relevant authors in Scopus on "Infrastructure logistics ".
- To identify the the facilitating the sale of goods to countries in desperate need of such goods."
- To examine about the increasing the market for goods by producing them on a large scale. Earning foreign currency through exports."

## Data Collection:

The published Scopus database was used in the study. The best database for high-quality research articles in the discipline of management is Scopus. The study makes use of the Scopus database because it was discovered that several well-known sources, like Google Scholar, lacked its high-quality research. When the term "Study the relationships between transport infra and impact on trade" was entered in the Scopus database, 78 publications were discovered in the article title, abstract, and Keywords. 42 items were discovered with a second search using the title. Additionally, we limited our research to the years 2021 through 2022 and discovered 26 articles. The investigation also discovered 26 articles for additional analysis based on the exclusion of the subject area, document title, source title, and language. Nees Jan van Eck and Ludo Waltman from the Centre for Science and Technology Studies (CWTS) at Leiden University uploaded the final 26 articles' CSV file to VOSviewer for additional bibliometric analysis. The relationship between authors, nations, author citations, journals, sponsors, and popular keywords is further examined.

## Analysis and Results

### Overview of the Data

A total of 26 articles written by 338 authors from 2021 to 2022 were used for the final analysis. Out of 26 documents 7 documents were cited at least once. The average citation per document is 3.71 per course.

Particulars	Result
Total Articles	26
Total Authors	338
Time Frame	2 Years
Organisations	125
Countries	70
Total Journals	5
Reference	4982
Cited Sources	2920
Cited Authors	6964

Table 1 Overview of the Data

### Year wise Publication

Publication increase stays popular amongst researchers within the last two years. There have been a few ups and downs, but nothing major. Transport infrastructure and trade are still popular topics in marketing and international business study. The authors are mostly from strategic management, marketing, or international business. The study was largely undertaken in developed countries.

Year	Articles	% (N= 26)
2021	8	0.30
2022	18	0.69

Table 2 Year wise Publication and Average

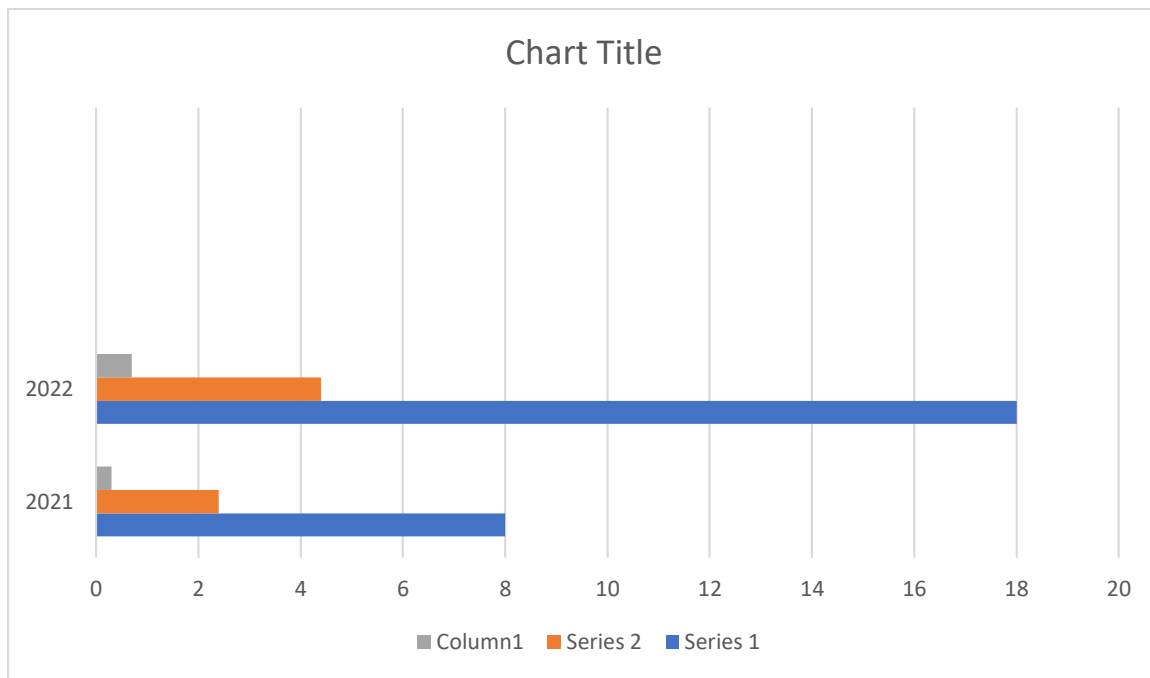


Figure 1 Publication Details

### Author Analysis

Table 3 shows the researchers' research on "Transport infra and impact on trade" from 2021 to 2022 had more than 30 citations. James Ochieng (2022), Kaiser (2022), Larina (2021) Rubinova and Sebti (2021) are the top researchers in the field. The authors mainly analyse the articles focusing on the international trade, sustainability, Logistics and Transport Infrastructure. Due to their longevity compared to more recent publications, articles published in 2021 and 2022 received more citations. Table 3 showed the top authors with more citations, whereas Table 4 showed authors with more papers.

Author	Citations
baniya s.	39
bensassi s.	97
blanco reyes p.	22
brugnoli a.	22
dal bianco a.	22
ellis e.a.	22
ellis p.w.	22
garcía p.	25
gutierrez j.	25
hernández gómez i.u.	22
martini g.	22
martínez-zarzoso i.	97
montero s.a.	22
márquez-ramos l.	97
putz f.e.	22
rocha n.	39
rodríguez-ward d.	22
romero montero j.a.	22
ruta m.	39
salas-olmedo m.h.	25

scotti d.	22
singh s.k.	55
suárez-burguet c.	97

Table 4 represented the number of articles published by the individual authors concentrating on “Transport infra and trade”. Authors such as Curtis, Fred Stone, Susan, and Anna Strutt Camisón-Haba, Sergio, and José Antonio Clemente Stević, Hernandez gómez, Singh.sk, and Romero montero j.a. are having more publication in the field of “Transport infra and trade. Rubínová & Sebti published highest 5 articles focusing on the “Transport infra and logistics”. Kieu Oanh Do University of Economics and Business Vietnam National University is the associate professor having research orientation for the subject of global strategy, global innovation, and international business while it to measure the degree of trade facilitation of Europe countries and use the Gravity Model to empirically analyze the effect of trade facilitation.

Author	Documents	Citations	Average
baniya s.	1	39	0.025
bensassi s.	1	97	0.010
blanco reyes p.	1	22	0.045
brugnoli a.	1	22	0.045
dal bianco a.	1	22	0.045
ellis e.a.	1	22	0.045
ellis p.w.	1	22	0.045
garcía p.	1	25	0.04
gutierrez j.	1	25	0.04
hernández gómez i.u.	1	22	0.045
martini g.	1	22	0.045
martínez-zarzoso i.	1	97	0.010
montero s.a.	1	22	0.045
márquez-ramos l.	1	97	0.010
putz f.e.	1	22	0.045
rocha n.	1	39	0.025
rodríguez-ward d.	1	22	0.045
romero montero j.a.	1	22	0.045
ruta m.	1	39	0.025
salas-olmedo m.h.	1	25	0.04
scotti d.	1	22	0.04
singh s.k.	1	55	0.018
suárez-burguet c.	1	97	0.010

Table 3 Authors with Publications

## Journal Analysis

Table 5 represents the information related to journals that published maximum articles focusing on the “Transport infra and impact of trade”. The journals from the Marketing, International Marketing, and International Business published the research papers. The Highest publication made by the International Marketing Review, ISSN: 0265 – 1335, Published by Emerald publication. Journal of business research, Print ISSN: 0148-2963, Online ISSN: 1873-7978, published by Elsevier Publications. All these journals are managed by top-class publication houses like emerald, Elsevier, Willey

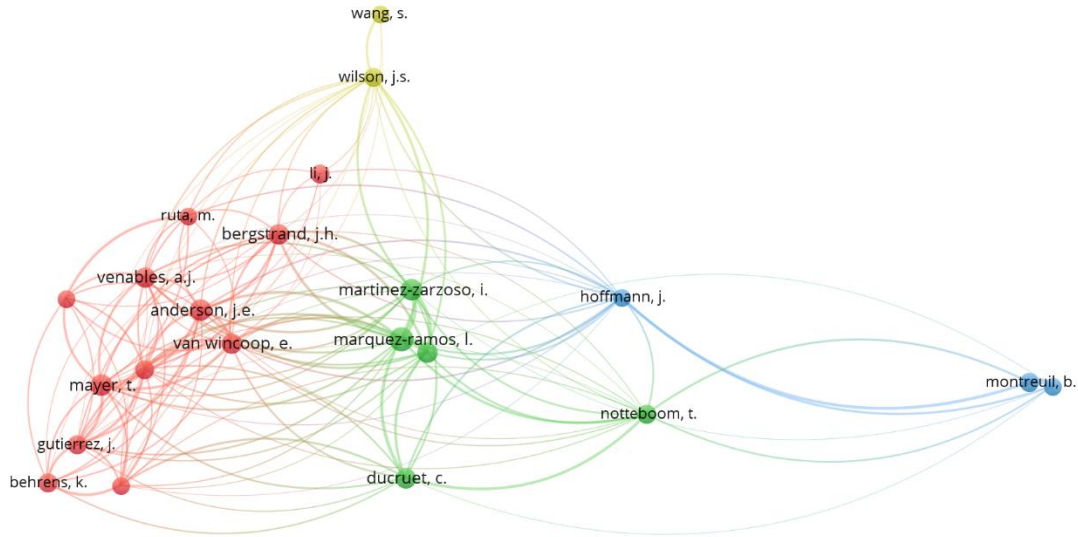
Source	Documents	Citations	Average
archives of transport	1	6	0.166
asia europe journal	1	8	0.125
comparative economic research	2	13	0.153
environmental science and pollution research	2	32	0.062
europaean journal of political economy	1	8	0.125
europaean transport - trasporti europaei	1	55	0.018
forest ecology and management	1	22	0.045
international economic journal	1	6	0.166
international journal of economics and business administration	1	5	0.2
journal of development economics	1	39	0.025
journal of geographical sciences	1	8	0.125
journal of korea trade	2	11	0.181
journal of transport geography	1	9	0.111
lex localis	1	4	0.25
maritime business review	1	9	0.11
nature sustainability	1	16	0.0625
networks and spatial economics	1	4	0.25
news of the national academy of sciences of the republic of kazakhstan, series of geology and technical sciences	1	14	0.071
research in transportation business and management	2	14	0.1428
sustainability (switzerland)	5	18	0.277
transition studies review	1	4	0.25
transport policy	1	10	0.1

The total number of citations for the journals is shown in Table 6. Journal of International Business Studies, International Marketing Review, Journal of Business Research, Journal of International Marketing, Journal of Consumer Research, and Journal of Marketing Research are the top journals with the most citations. These journals are distributed by reputable publishers like Emerald Willey and Elsevier, among others.



Source	Citations
archives of transport	6
asia europe journal	8
comparative economic research	13
environmental science and pollution research	32
europaean journal of political economy	8
europaean transport - trasporti europeei	55
forest ecology and management	22
international economic journal	6
international journal of economics and business administration	5
journal of development economics	39
journal of geographical sciences	8
journal of korea trade	11
journal of transport geography	9
maritime business review	9
nature sustainability	16
news of the national academy of sciences of the republic of kazakhstan, series of geology and technical sciences	14
<b>research in transportation business and management</b>	14
sustainability (switzerland)	18
transport policy	10
transportation research part a: policy and practice	144
archives of transport	6
asia europe journal	8
comparative economic research	13
environmental science and pollution research	32
europaean journal of political economy	8
europaean transport - trasporti europeei	55
forest ecology and management	22
international economic journal	6
international journal of economics and business administration	5
journal of development economics	39
journal of geographical sciences	8
journal of korea trade	11
journal of transport geography	9
lex localis	4
maritime business review	9
nature sustainability	16
networks and spatial economics	4
news of the national academy of sciences of the republic of kazakhstan, series of geology and technical sciences	14
research in transportation business and management	14
sustainability (switzerland)	18
transition studies review	4
transport policy	10
transportation research part a: policy and practice	144

Table 4 Journals with highest citation



The organizations listed in Table 7 are those that supported research in the "Transport infra and impact on trade" discipline. Leading supporters of research in the field of transport infra and impact on trade include the Clark University, Department of biology, university of florida, gainesville, Department of business labour economics, ; Department of economics and institute of international economics, Complutense university Madrid, World Bank, US; and University of Bergamo For Earth And Climate Research, Earth And Life Institute, Université Catholique De Louvain, Place Louis Pasteur 3, Louvain-La-Neuve, 1348, Belgium.

Organization	Documents	Citations
centro de investigaciones tropicales, universidad veracruzana, xalapa, veracruz, 91000, mexico	1	22
clark university, united states	1	39
college of tourism, hunan normal university, changsha, 410081,	1	16
department of biology, university of florida, gainesville, fl 32611, united states	1	22
department of business and labour economics, birmingham business school, university of birmingham, united kingdom	1	97
department of economics and institute of international economics, universitat jaume i, spain	1	97
department of economics, georg-august universitaet goettingen, germany and institute of international economics, universitat jaume i, spain	1	97
dpt. human geography, complutense university madrid, av. profesor aranguren, s/n ciudad universitaria, madrid, 28040, spain	1	25
ejido noh bec, noh becquintana roo 77190, mexico	1	22
equilibrio en conservacion y desarrollo, a.c. (ecodes), xalapa, veracruz, 91158, mexico	1	22
eupolis lombardia, italy	1	22
facultad de ciencias agropecuarias, universidad veracruzana, xalapa, veracruz, 91000, mexico	1	22

federal university of campina grande, r. aprigio veloso, 882, b. universitario, campina grande, pb 58.429-900, brazil	1	16
indian institute of management lucknow, lucknow - 226013, india	1	55
world bank, united states	1	39
international institute for applied systems analysis, laxenburg, austria	1	16
the nature conservancy, 4245 north fairfax drive, suite 100 arlingtonva 22203, united states	1	22
the world bank, washington, dc, united states	1	16
universidad intercultural maya de quintana roo, jose maria morelosquintana roo 77870, mexico	1	22
university of bergamo, italy	1	22
university of brescia, italy	1	22
university of salamanca, campus miguel de unamuno. edificio fes, av. francisco tomás y valiente, s/n, salamanca, 37007, spain	1	16

*Table 5 Organisation wise publications*

The following table shows the most active/productive research territory/country in the field of Transport infra and trade. The United States is the most active country in the field of Transport infra and trade with 7 publications accounting for 64.81% of total research work done on the topic. It is followed by Poland with a total of 5.23 %publications.

Country	Documents	Citations
Poland	6	53
Spain	6	27
United Kingdom	5	152
United States	7	108

*Table 6 Country wise Publication*

### Co-occurrence Analysis

Publication increase stays popular amongst researchers within the last two years. There have been a few ups and downs, but nothing major. Transport infrastructure and trade are still popular topics in marketing and international business study. The authors are mostly from strategic management, marketing, or international business. The study was largely undertaken in developed countries. The same colour is used to represent nodes in the same cluster. "International trade" is the most often searched term. "Transport infrastructure," "trade flow," "export," and "gravity model" are a few examples. VOSviewer classified the employee turnover keywords into clusters. The term "transport infrastructure" appears the most frequently in search terms. The terms "logistics," "infrastructure," "international marketing," and "United States, Poland &Spain " are frequently used. The frequency of co-occurrence of a keyword reflects the strength of the link. The link strength is a quantitative measure used to depict the relationship between two nodes.

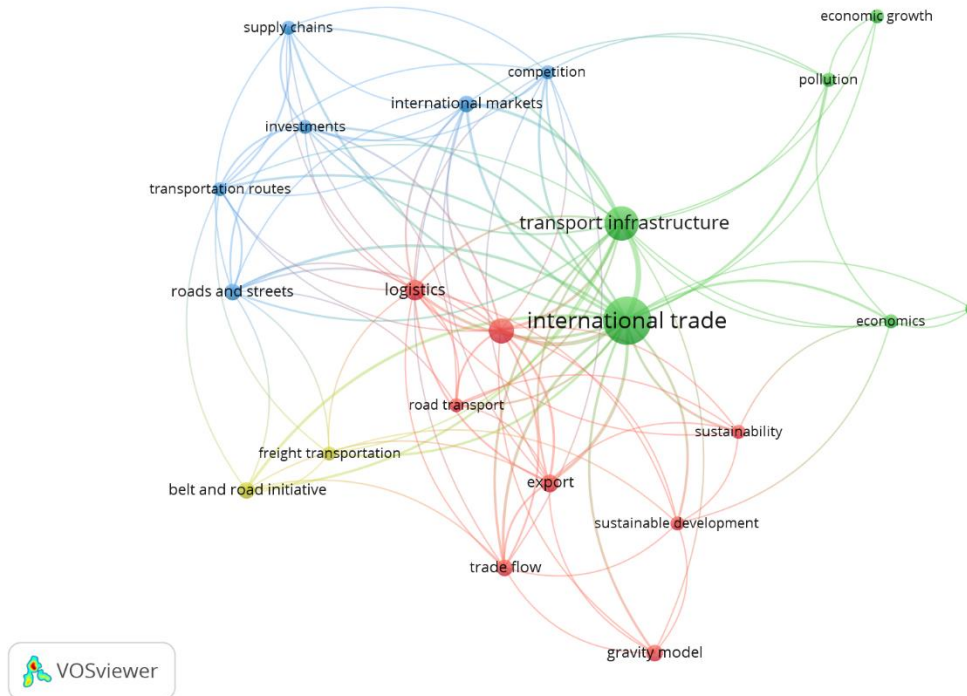
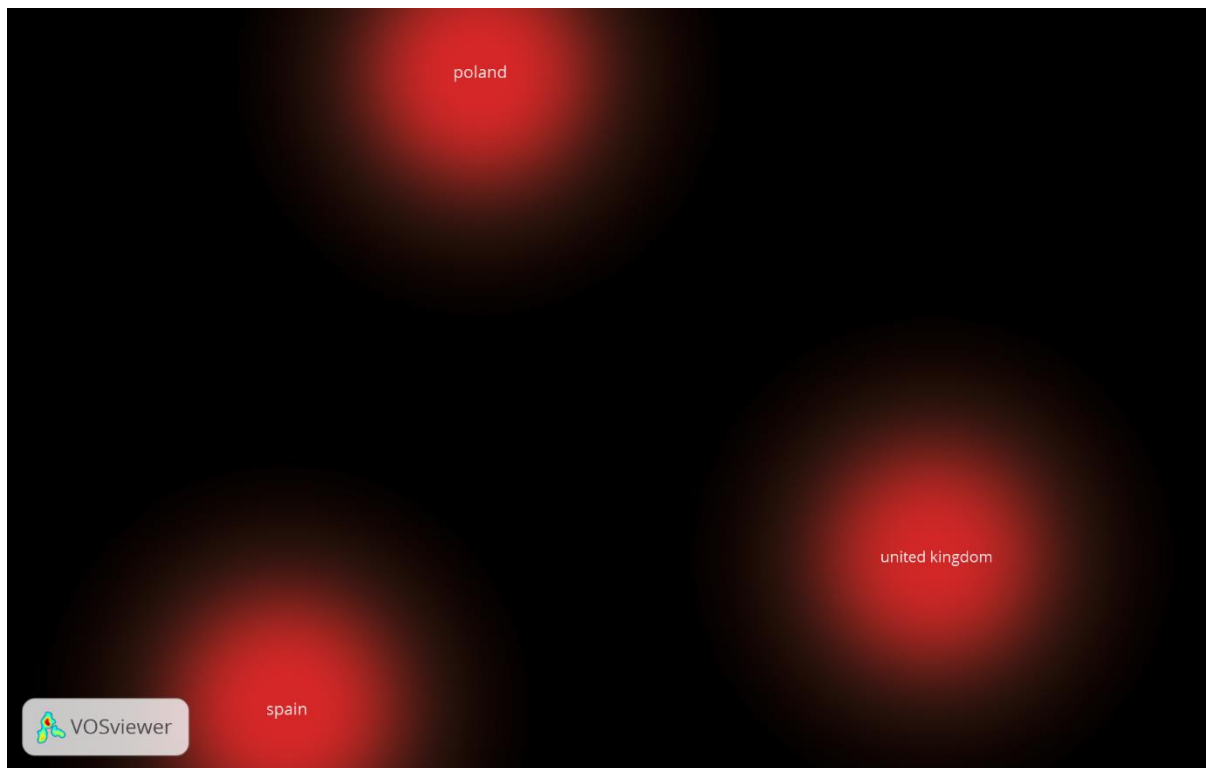


Figure 2 Keywords Co - occurrence network

Without any cooperation, conducting research on any subject becomes typically fairly difficult for an individual. As a result, many initiatives require collaboration and teamwork to finish the research. Hence, co-authorship analysis is essential when conducting bibliometric analysis to assess the current state of research in a certain field. Below is an analysis of nation co-authorship from the study. This co-authorship analysis was done using the programme VOSviewer. The level of communication between nations and those that significantly influence this field of study is revealed by looking at national co-authorship. Strong nations are represented by large densities. Without any cooperation, it is usually fairly challenging for an individual to conduct study on any subject. As a result, in order to complete various efforts, cooperation and teamwork are necessary. Hence, while performing bibliometric analysis & Bar Graph to evaluate the present level of research in a certain topic, co-authorship analysis is crucial. This is a breakdown of the study's national co-authorship. Using Vosviewer, this co-authorship analysis was carried out. Examining national co-authorship reveals the degree of communication between nations and those who have a substantial impact on this field of study. Dense populations are a sign of strong nations.



*Figure 3 Country wise Co Authorship Network*

## Conclusion

This study offers the findings of a bibliometric analysis of papers on transportation infrastructure and trade facilitation that were indexed in the Scopus database between 2021 and 2022. Transportation infrastructure, country-specific distribution, top journals, institutions, and author and institution cooperation have all been investigated. The co-occurrence of terms was also explored in the article. There were about transport infrared documents between 2021 and 2022. The number of writers and references has increased over time. The nations with the fastest economic growth in this region are the United States, Poland, Spain, and the United Kingdom. In terms of Total Publications, the United States has consistently kept the top rank over time. Poland, which has more than seven universities, the second-highest figure. The study examined regulatory quality and corruption control as indicators of institutional quality. Exporting countries' regulatory quality should be improved. In today's corporate environment, knowledge has become a critical aspect in establishing a market competitive advantage for organisations. As a result, organisations are shifting towards learning units and increasing the knowledge development process. The paper focuses on the study of the impact of organisational culture strength on the process of acquiring and transferring information. " There are clear benefits from improvements in physical land transportation, as well as more considerable benefits from enhanced trade facilitation. The consequences of these findings are that physical infrastructure is required for trade to occur.

## Limitation

Although several limitations of this study can be identified, the bibliometric analysis performed in this study to analyse the material on the transport infra and impact on trade can provide information that is beneficial to scholars and practitioners. Future studies can choose a bigger number of alternative journals, as well as conference proceedings and books from various domains, for example, as the top 5 journals mentioned here don't reflect the complete body of the transport research. Both extending and reducing the time range might improve the outcomes. Future research on the transport infrastructure, logistics can look into the authorship of the paper, including the influence the author has on the field, and look into the ramifications of each issue and the theories that have been employed and put to use in those studies.

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