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MARITIME LOGISTICS RESEARCH IN SOUTH ASIA: A SYSTEMATIC REVIEW

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ABSTRACT - Systematic reviews are trending because they inform future studies by providing a snapshot of the existent research within the relevant field. We found a dearth of systematic reviews and bibliometric analysis in maritime logistics. This study discusses the contributions of authors based in South Asia to research in maritime logistics. Moreover, maritime logistics research in this geographic region needs to be examined in the context of South Asia's emergence as a geopolitical and maritime hub. This review reveals that an overwhelming majority of research on maritime logistics in South Asia originates from India. This review identifies five research clusters on examining networks between authors and countries. These were derived based on author keywords found in the pool of research using systematically derived through Scopus. We find that, among the South Asian research on maritime logistics, research focusing on the Indo-Pacific receives particular attention. There is also a rapidly growing focus on sustainability in shipping and in optimising container terminals.

Keywords: maritime logistics; container terminals; systematic review; bibliometric analysis; shipping; South Asia.

1. INTRODUCTION

South Asia is located within the main sea route that connects Asia with Europe. This route has a throughput of 158.7 million TEUs (19.6% of the global container throughput of 811.2 million TEUs) in 2019 [1]. South Asia comprises Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. India is the economic heart of the region. Sri Lanka, given its strategic location in Asia, plays a major role in the region's shipping activities [2]. The Port of Colombo is the 25th busiest and it was the fastest-growing container port in the world in 2018 [3]. All these factors underscore the importance of conducting research on maritime logistics in South Asia. According to our extensive search, no systematic reviews have been published on the intersection of maritime logistics and the South Asian region. The same limitation was found with systematic reviews in maritime logistics in global case as well. We derived three research objectives after considering all facts found in our literature review. 1. Define past and present trends in maritime research in South Asia, 2. Introduce trending research directions for future maritime research, 3. Present research networks within the region and beyond to encourage more collaboration are the main objectives of this study. The major focus of this study is to assess the status quo of literature published by authors based in South Asia in the domain of maritime logistics.

2. MATERIALS AND METHODS

Replicability is one of the most important aspects of systematic reviews. Defining the Keyword Structure (KS), refining the search results and the analysis are the key steps in methodology [4], [5]. This review was devised based on recommended methods in previous systematic review studies, in both maritime logistics and other domains under transport and logistics. First, we finalised our KS based on previous systematic reviews and opinions of relevant experts in industry and academia. We used the KS to find relevant papers in Scopus[1] for our systematic review. Levels of the KS are defined based on maritime logistics and authors affiliated to South Asian institutions. We limited the result to journal articles published in English. We excluded irrelevant subject areas to narrow down the result further. This was done after careful inspection to ensure no papers are incorrectly categorised to those subject areas by mistake after going through search results in Scopus. Our final search results included 1,036 papers. Based on title, keywords and Abstract, of the selected papers and we eliminated irrelevant papers that discuss maritime logistics partially but were not themselves within the scope of maritime logistics operations. Studies in marine engineering and security, shipbuilding and scrapping, trade agreements were excluded. The final count of papers in the narrowed-down pool was 262.

3. RESULTS AND DISCUSSION

3.1 Bibliometric Analysis

According to our analysis, most of the studies (85%) were conducted by authors attached to Indian institutions. Each Sri Lanka, Bangladesh, and Pakistan have contributed around 5% of the total pool of papers with Sri Lanka being slightly ahead of the rest. Understandably, there were no contributions from Afghanistan, Bhutan, and Nepal probably because they are landlocked countries. Altogether, less than 10 papers per annum were published before 2014. We found that more than 50% of all the papers captured through Scopus were published after 2017. M.K. Tiwari of the Indian Institute of Technology Kharagpur, India was the author making the most contributions with 14 publications. The list of top authors with large contributions includes three authors from Sri Lanka, even though each country's contribution to the overall pool was around 5%. Studies conducted at Indian affiliations included the work of 453 authors inside India as well as outside. A. De and N. Subramanian were among the top contributors. However, they were not based out of South Asian institutes. The top contributing institute is the Indian Institute of Technology Kharagpur, India. We find that there are no research links among South Asian countries in maritime logistics. Interestingly, researchers based in United Kingdom, China, Australia, and United States of America have made a salient contribution to selected studies almost as much as authors based in Sri Lanka, Bangladesh, and Pakistan.

3.2 Research Clusters

We conducted an analysis based on keywords in selected papers and five clusters were identified: 1. Geography and geopolitics, 2. Sustainability in ports and shipping, 3. Optimising container terminal operations, 4. Port logistics and 5. Maritime supply chain management (Figure 1). We observed a trend within the relationship and the conflicts between China and India in the first cluster. In the second cluster, we observed how sustainability connects with shipping and ports. In the same cluster, topics

[1] Evidence supports the use of Scopus (managed by Elsevier publishing) as an excellent source of maritime research articles (e.g., Davarzani H. et al, [10]). Furthermore, Scopus is the largest abstract and citation database for peer-reviewed academic literature (i.e., scientific journals, books, and conference proceedings) within the fields of science, technology, medicine, social sciences, and arts and humanities. In fact, Scopus covers over 20,000 peer-reviewed journals, which is more comprehensive than the Web-of-Science database (managed by Thomson Reuters; includes only ISI indexed journals thus limiting to approximately 12,000).

such as identifying global acquisitions among container lines are visible as well [6]. The sustainability aspect connects Indian ports investigated through the Indian perspective. The third cluster contains papers discussing container terminal operations optimisation. Studying container terminal operations is growing in popularity while other types of operations such as dry bulk, bulk, and liquid bulk were not given much attention [7]. Data Envelopment Analysis (DEA) was the only keyword linked to methodologies in this cluster. Container terminal operations optimisation and container terminal efficiency were key focus areas. The fourth cluster discusses overall port logistics where it connects ports, shipping, and logistics. The final cluster explains the studies conducted from a supply chain perspective with a focus on maritime logistics. Inventory was the main perspective that these papers discussed. However, the research agenda within maritime logistics has evolved over time. The sustainability aspect in coastal and liner shipping industries is trending in the sustainability in ports and shipping cluster. Focus on port logistics can also be identified as a trending research area.

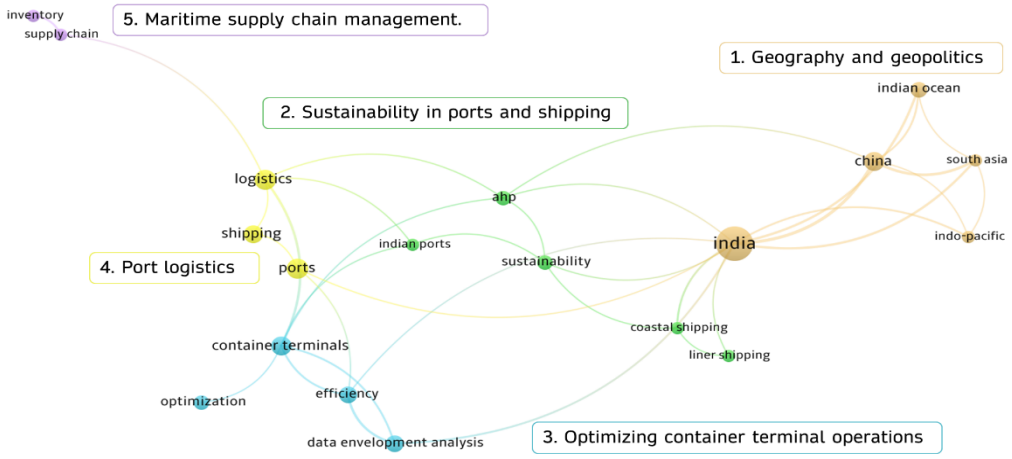

Figure 3. Identified Research Clusters

4. CONCLUSION

There were five research clusters identified through analysis of author keywords. Focus on container terminals, sustainability and the Indo Pacific region received particular research interest. Few collaborations between academia and industry experts were identified. More industry collaborative work is important to the growth of this field. Future studies based on South Asia must be conducted based on an understanding of research directions within or beyond the five research clusters identified in the study. More collaborations between South Asian countries are needed to improve the region's maritime logistics research.

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