

Air Cargo Network Structure Characteristics and Robustness Analysis under the Belt and Road Area

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Abstract : Based on the complex network theory, we construct the air cargo network of the Belt and Road area, analyze its regional distribution and structural characteristics, measure the robustness of the network. The regional distribution results show that Southeast Asia and China have the most prominent development in the air cargo network of the Belt and Road area, Central Asia is the least developed. The structure characteristics found that the air cargo network has obvious small-world characteristics; the degree distribution has single-scale property; it shows a significant rich-club phenomenon simultaneously. The network robustness is measured by two attack strategies of degree and betweenness, but the betweenness of network nodes has a greater impact on network connectivity. And identified 24 key cities that have a large impact on the robustness of the network under the two attack strategies. Based on these results, recommendations are given to maintain the air cargo network connectivity in the Belt and Road area.

Keywords : air cargo, complex network, robustness, structure properties, The Belt and Road

Conference Title : ICMIC 2021 : International Conference on Modelling, Identification and Control

Conference Location : New York, United States

Conference Dates : January 28-29, 2021