ABSTRACT

SPACE INTERACTION MODEL ANALYSES FOR THE INTER-REGIONAL TELEPHONE CALL FLOWS IN THE METROPOLITAN AREAS

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This paper applies various types of space interaction modeling approaches to analyse the relationship between inter-regional telephone call flows and their distances. For the telephone call flows, we consider both frequency and their duration time, and for the distance we define geographical type and fare type. Applying the gravity model approach to telephone call flows data among 40 regions in the metropolitan area, we find that the distance resistance parameter is larger for the geographical distance case than for the fare distance case, and that the geographical distance gives more effects to the frequency than to the duration time. One-factor type entropy model is found to explain the destination selection behavior well for the origin constrained problem. Furthermore, the inverse entropy model and the constrained entropy model are shown to improve the goodness of fit, and we propose the method to forecast the cost function for applying these entropy models. From these entropy model analyses we know that the flow depends more on the size of origin rather than the size of destination, and that the distance resistance parameter is larger for the frequency data. Finally this type of modeling approach is shown to be effective for studying and modifying the telephone fare system.