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DYNAMICAL AND COMPLEX LOGISTICS INFORMATION NETWORKS

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Abstract. Recently considerable attention has been attracted to information technology and internet infrastructure which grows rapidly. Information demands in logistics industry continuously increase. However, in the past half century, powerful and efficient logistics information networks are still out of our sights. Taking this into account, in the present paper we develop a theoretic model and provide a dynamical analysis for the dynamical and complex logistics information networks, from which we obtain some useful results on the description and simulations of logistics information networks, and the corresponding mechanisms.

Keywords: Logistics, Logistics information networks, Complex networks, Node transition.

AMS (MOS) Subject Classification: 37F05, 34C60.

1 Introduction

In the past decade, much attention has devoted to logistics networks, and some researchers deemed that logistics networks are actually supply chain management [1-3]. Reyes [3] proposed that the logistical network consists of facilities and distributional options that perform the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Investigations were undertaken on various aspects of logistics networks by a diverse of researchers. In 2004, based on the macroscopical systemic-theory, Xu and Ju [4] stated that the logistics network generally is a name of logistics service system, which with the improvement of internet economy and information technology, is developed to meet the demand of logistics' systematization and socialization. It consists of three organically connected networks: logistics organization networks, logistics infrastructure networks and logistics information networks. In addition, they showed that

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