

MODEL OF SPREADING MANAGEMENT INFORMATION IN SOCIAL AND ECONOMIC NETWORKS

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Social and economic network models are used in many domains such as economics (innovation, management and marketing), politics, revolutionary action, crime, terrorism, disasters and emergencies, wars, epidemics etc. The paper aims to develop a model for spreading management information in socio-economic networks, taking into account information properties of active agents. The subject is a socio-economic network in which nodes are people. The object is the process of spreading information in social and economic networks. In the framework of this research a case is considered when information is entered into the network by a single agent (model generalization for the case of many agents will be made separately). It has been proved that within the model of information spreading in a network, when the perception by the agents is only taken into account, the model of socio-economic network can be reduced to the problem of finding a particular value of some function (or the product of certain functions), which is given to a number of natural numbers. We proved that the model of social and economic networks can be described as the one-dimensional chain, in which the agents are at the equal distance (strongly connected network), or a set of the one-dimensional chains (weakly connected network). The criterion for the ability of local agents to restore the adequate management information is obtained. The developed apparatus is based only on the characteristics both of the network and agents, which can be measured in experiments. Such experiments can be carried out in some domains, and used for prediction in other domains. Thus, in the model the function is used, which describes the effects of the loss of information in the communication process. This function does not depend on the type of information, which is passed from communicant to communicant. For example, it depends on the type of network: Skype, the Internet (e-mail, social media, electronic media, etc.), phone, communication in a crowd, etc.

Keywords – social-economic network, management, information, management efficiency criterion.