Analyzing Co-Purchase Network of CDs in Japanese Online Store

Ryosuke Nishida,^{*1*2} Masaya Mori,^{*3} and Takashi Iba ^{*4*5}

*1 Graduate School of Media and Governance, Keio University

*3 Rakuten Institute of Technology Lab.

*5 Visiting Researcher, Rakuten Institute of Technology Lab.

Introduction

In this poster, we report our research results about visualization and analysis of the co-purchase networks of CDs in Japanese Online Shop, "Rakuten Books", which is one of the biggest online stores in Japan. Co-purchase networks show the hidden relations among products, where a node mean a product and an edge mean co-purchase relation. The data we use is the real market data of 30,000 customers at Rakuten Books by picking up at random. The target term is from April, 2006 to May, 2007. We measure the indicators of the co-purchase networks of CDs. Our study suggest that "Free Choices make Emergent Order" . It means consumer' s independent choices make the emergent order of the market.

Result

The Following network is one of the co-purchase network of CDs. Full connection 30,000 consumers Threshold =1





*This research was done as an analysis by Rakuten Institute of Technology Lab., and the data do not include any personal information

*2 Visiting Assistant, Rakuten Institute of Technology Lab. *4 Faculty of Policy Management, Keio University

Method

We describe a node A if there is the product A is purchased by the target customers. Then we descrive an edge to connect node A and node B if the product A and the product B is purchased by a cunstomer. For describing the edge, we try two types of connection method: "full connection" and "sequential connection" . In the former method, all the nodes which user bought connect each other. In the latter method, nodes connect as the sequential order of user bought. It means that an undirected graph is generated by the former method and a direct graph is generated by the latter. In addition, we describe full-size network and exception purchasing data only 1 user bought. These try show co-purchase' s specifics clearly.

Full connection





Sequential connection



All the nodes of customers select are connected

The nodes connected as the customers' sequential sellection





