

Hierarchical Database Model for Querying Economic Network Independence Distribution

Akinwale Adio Taofiki, University of Agriculture, Abeokuta, Nigeria

ABSTRACT

The development of the internet has been triggering numerous mutations in the visualization of actors in economic network independence distribution (ENID) of goods. ENID overcomes the physical barriers of shop-floor space so unprecedented variety of products could be offered to the customers. Avoidance of expensive trade space allows suppliers to reduce price compared to those in the physical world. User friendly and easy contact with the supplier of the goods make shopping very convenient. Despite these advantages of ENID, there is a need to develop better theories about how this system should behave in order to protect participants' interests. This work employed hierarchical database model using B-tree and pre-order algorithm to insert and traverse participant records for easy processing. N-level models were adopted to calculate each level and sub-level cluster commission. The implementation was carried out using C# and sql. The application of the model permits the participants to query any information about ENID for on line real time decision makings.

Keywords: Cluster, Commission, Graph Properties, Independence Distribution, SQL

INTRODUCTION

The development of the information and communication technology has been triggering numerous mutations in the advance usage of economic network independence distribution of goods and services. Economic network independence distribution is the mapping and measuring of relationships and flow of resources between people, groups, and organizations. It encompasses theories, models, and applications that are expressed in terms of relational concepts or processes. Economic network independence

distribution is a structure expressing economic element as a node and the relationship between elements as edge. The node represents individual or group of customers and the edge or link expresses diversified economic relationship between the element of the organization. The goal of the analysis is to find degree of mutual relation among the egos. In addition to the use of relational concepts of economic network independence distribution, actors and their actions are viewed as interdependent rather than independent and autonomous units. The relational ties or linkages between actors are channels for transfer or "flow" of resources either in form material or nonmaterial.

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Virtualization and visualization of economic network have attracted substantial research due to its great importance to presenting information relating to economic ties in easily manageable form. Researcher has been able to identify various ways of representing economic network such as movement of resources in an area or city, communication patterns, egocentric network like goods distribution pattern on a visual browser using various graphs drawing algorithms. However, the implementation of some of this known algorithm is still not clear. This work identifies hierarchical database model that aids the building of an egocentric network for visualizing economic ties or activities. Visualizing an economic network like distribution or communication goods and service will provide useful insight on how to process large economic network data and economic facilities for the management of these resources and workflow.

RELATED WORKS

A lot of work had been done by researchers to visualize social network analysis such a COMMATRIX, Gephi, Social Network Image Animator, JUNG, Keyhubs, etc., but few works have been concentrated on economic network analysis. For instance, COMMATRIX one of the social network analysis's was developed by researchers from Technical University, Berlin, to dynamically analyze electronic document among the users. JUNG was developed for the purpose of providing a common and extensible language for the modeling, analysis, and visualization of relational data.

A major innovation in economic network analysis has been the use of methods stemming from graph theory to describe and study relations between economic agents in the network. It was assumed that economic agents can interact and trade with other agents which become quite unrealistic for large economic network independence distribution. Slikker and Van Den Nouweland (2001) viewed economic network as an independence distribution in which customers interact only with their

neighbours. In this era of information technology, neighbours might be similar firms within the same industry, but these firms will then be linked either through customers or suppliers with firms in other industries. Through these connections, innovation and awareness of the product will diffuse throughout the system. The rate and extent of this diffusion then depends on the model, structure and connectivity of the economic network distribution.

Goyal (2007) emphasized that an hierarchical formal organization can centrally coordinate and distribute products efficiently among the egos in the system. He said that hierarchical design facilitates changes which scalability is a major goal. He recommended hierarchical model because modularity in the system enables to create and design an element for consistently expanding and growth.

Since the middle of 1970's when the relational database model began to dominate database research areas, the model has been criticized for its too simple mechanism for representing complex objects and supporting useful semantic concepts. The introduction of semantic database model in 1980's was complicated to be completely implemented due to richer abstractions of aggregation and derived attributes. This work views hierarchical database model as a relation between entities which benefits both the user interfaces and the system implementation in related to economic network distribution taking into consideration the transparency of monetary information among the participants.

HIERARCHICAL DATABASE MODEL

The hierarchical database model organizes data in a tree structure. Figure 1 illustrates an hierarchical database model of record types $\{R_1, R_2, R_3, \dots, R_n\}$ and a set of links connecting all record types in one data structure diagram. Every record type of the tree except the root has a parent node. The nodes with the same parent are called twins or siblings. For

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