


# A Text-Based Competition Network: The Perspective of Information Disclosure


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## ABSTRACT

This paper utilizes nonfinancial information disclosure to develop a measure of text-based competition network. Using the data of China's listed firms, the authors adopt the textual analysis method to identify a unique group of competitors for the focal firm and construct the text-based competition network. In the whole network, leading firms receive increasing attention from competitors, and they play a vital role for the dynamic changes in the whole market. Moreover, the interactions between the focal firm and competitors in the text-based competition network are shown by some financial indicators. The characteristics of the text-based competition network have a significant impact on the future performance of the focal firm. Finally, economic links in the competition network are discussed by varying the number of competitors, which shows the impact of various competitors on economic similarities. The text-based competition network shows the relative importance of competitors for the focal firm and explains firms' decision-making from the perspective of dynamic competition.

## KEYWORDS

Competitors, Economic Links, Information Disclosure, Text-Based Competition Network, Textual Analysis

## INTRODUCTION

As a special kind of interaction between firms, competition is the determinant of business strategy and represents contested goals (Galvin et al., 2020). The emergence of competition may be determined by some factors. In terms of the product market, one firm will face similar suppliers and customers with competitors, and the competitive environment faced by this firm is built by its products or services (Hoberg & Phillips, 2016). Some competitive relationships may come from other sources,

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such as labor, patents, and prices (Galvin et al., 2020). According to the resource-based view, unique and rare resources will encourage firms to design competitive actions and reactions, which may determine their survival. During this process, competition emphasizes limiting imitation from competitors, and the close relationship between firms and their competitors will be built by utilizing the same or similar resources (Barney, 1986). The reactions of a firm to its competitors are directly influenced by the decision-making and performance of competitors, which may produce imitation among such firms (Porter, 1989). The core of exploring competition is to explain how firms engage in some competitive actions and reactions, which are represented by the structure of the whole market (Andreovski et al., 2016).

The identification of competitors is a key step in exploring the competitive relationships between firms. In Porter's (1989) theory, the factors related to competition mainly come from the product market where firms compete for customers or suppliers, and these factors will determine the future development goals of such firms. Consistent with this view, the process of identifying competitors depends on the identification of the product market; that is, firms in the same product market are engaged in competition for economic surplus, produced by their goods or services (Salop, 1979). Many studies have used industry classification to determine the boundary of the product market and identify the competitors of one firm by industry tags (Chen et al., 2017; Hrazdil et al., 2014; Katselas et al., 2019). The common industry classification systems include the Guidance for Industry Classification of Listed Companies released by the China Securities Regulatory Commission (CSRC), the Standard Industrial Classification (SIC), and the Global Industry Classification Standard (GICS). The decision-making of a firm is regarded as its reactions to the actions of competitors in the same industry, which explain some behaviors of this firm, such as capital structure (Phillips & Mackay, 2005), earnings management (Kedia et al., 2015), information disclosure (Lin et al., 2018), and corporate social responsibility (Cao et al., 2019). From the nature of industry classification, the measure of competition is mainly based on industry boundaries.

According to the theory of industrial organization, the industry's degree of competition can be displayed through the concentration or differentiation of products (Li et al., 2013). The Herfindahl-Hirschman Index (HHI) is often used to describe the intensity of competition for firms in the same industry. Many existing studies have discussed the effectiveness of identifying competitors based on industry classification, but there are some obvious limitations in this method (Engelberg et al., 2018; Kang et al., 2022). First, the update cycle of industry classification systems is long, and the fixed industry boundary may make it difficult to match the relationship between industry tags and economic activities. Second, the unique competitive environment of individual firms cannot be described directly by industry classification, so it is difficult to measure the relative importance of competitors for one firm. Third, some firms may participate in one or more product markets, and the traditional industry classification cannot measure the competition between firms belonging to different product markets. For example, Apple Inc. competes with Lenovo Group in the laptop computer market but also competes with Huawei Technologies Co. in the mobile phone market. Similarly, the various products of Amazon will also create different competitive relationships in the e-commerce market or e-book market. It is worth noting that an increasing number of listed firms in China's retail industry have entered the real estate and medical industries, and firms in different markets may have vague relationships with their competitors based on industry classification. In this situation, the industry classification system has difficulty identifying competitors of individual firms and is unable to measure their relative importance.

Considering the nature of competition, when two or more firms have a similar development goal, these firms are engaged in competition (Medlin & Ellegaard, 2015). This view has been demonstrated in Text-based Network Industry Classifications (TNIC) proposed by Hoberg & Phillips (2016); that is, there is a competitive relationship between firms with similar products. From the idea of TNIC, the similarities of products create the competitive environment faced by focal firms from a micro perspective, which also shows the social interactions between firms (Lee

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