Chapter 14
A New Approach for Suggesting Takeover Targets Based on Computational Intelligence and Information Retrieval Methods: A Case Study from the Indian Software Industry

Satyakama Paul
University of Johannesburg, South Africa

Andreas Janecek
University of Vienna, Austria

Fernando Buarque de Lima Neto
University of Pernambuco, Brazil

Tshilidzi Marwala
University of Johannesburg, South Africa

ABSTRACT
In recent years researchers in financial management have shown considerable interest in predicting future takeover target companies in merger and acquisition (M&A) scenarios. However, most of these predictions are based upon multiple instances of previous takeovers. Now consider a company that is at the early stage of its acquisition spree and therefore has only limited data of possibly only a single previous takeover. Traditional studies on M&A, based upon statistical records of multiple previous takeovers, may not be suitable for suggesting future takeover targets for this company since the lack of history data strongly limits the applicability of statistical techniques. The challenge then is to extract as much knowledge as possible from the single/limited takeover history in order to guide this company during future takeover selections. Under such an extreme case, the authors present a new algorithmic approach for suggesting future takeover targets for acquiring companies based on solely one previous

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1. INTRODUCTION

After the Merger and Acquisition (M&A) announcement, the stock price of the target company usually increases while the stock price of the acquirer usually remains unaffected (Tartari, Doumpos, Baourakis, & Zopounidis, 2003), (Buckley & Ghauri, 2002). On the one hand, the stock price of the target company increases because the bidders expect the bid to be successful and, consequently, that it will involve a premium above the present price of the stock. On the other hand, the stock price of the acquirer remains unaffected since the market acts conservatively. As a result, an ability of a bidder to identify and bid in a likely target at an early stage can earn him abnormal returns during the bidding process. However, current research (Kinnunen & Collan, 2009) shows that most companies (including also many large companies) do not have structured systems to support their acquisition decisions. Thus, a structured decision model of target selection of future acquisitions is of considerable benefit to any acquiring company.

Conventional literature on M&A tells us that the acquiring company scouts takeover targets that bring it competitive advantage due to either similarity or dissimilarity (Halibozek & Kovacich, 2005). The need for scouting for either similarity or dissimilarity is determined by the strategic direction of an acquiring company (Mintzberg, Ahlstrand, & Lampel, 1998). It is to be noted here that strategic direction means the course of actions that helps a company to attain its organizational goals. While certain strategic directions of growth require an acquiring company to look for targets that can provide it with competitive advantage arising from similarity (e.g., similarity of products); other strategic directions require it to seek for targets that can provide it with competitive advantage arising from dissimilarity (e.g., complimentary of products to better serve customer needs) (Epstein, 2005). In general, a company’s financial variables (referred henceforth as company’s features) such as market capitalization, total share capital, total assets, and sales turnover are used to compare similarity between companies as these features refer to their sizes. However, in identifying dissimilar companies (in terms of complimentary products), debt assumes importance – the more capital intensive a product, the more capital and debt a company would incur to produce it. In this case the features that may vary are total debt, total debt/total assets, capital work in progress, and capital work in progress/sales.

Most studies on takeover target prediction are based on conventional statistical techniques, such as univariate analysis (Rege, 1984), nominal logistic regression (Palepu, 1986), multivariate discriminant analysis (Barnes, 1998), etc. Section 2 provides a literature study of related works. Since most of these methods aim to predict future targets based on multiple instances of previous takeovers, the present literature is not of much value to novice companies that are at the beginning of their acquisition spree. Since these companies have only limited history data, the applicability of statistical techniques is strongly limited in these scenarios.

In this chapter, the authors present a new algorithmic approach for suggesting future takeover targets for novice companies which have already acquired another company and would like to continue further acquisition in the future. In contrast to existing work, our approach is based upon a single previous acquisition record. The first goal of this work is to assist acquiring companies during their search process by measuring (i.e., interpreting) similarity as well as dissimilarity of potential takeovers to their single historical successful acquisition in terms of angle measurements in the high-dimensional feature spaces of