

## Executive Summary

This thesis uses quantitative textual analysis software to quantify the language used in press releases announcing M&A transactions as well as alliances and licensing agreements entered into by Novartis between 1996 and 2013. The analysis of these documents, in which the underlying transactions are described, addresses the research question whether it is possible to identify patterns in a company's long-term transaction behavior by applying the methodologies developed in the emerging field of text-based research.

In the examination of this research question the following steps are conducted:

First, a general introduction to the concepts and theories of mergers and acquisitions in general and in the context of the pharmaceutical industry in particular, is provided. Second, after a brief discussion of existing approaches within the field of text-based research, major methodological and analytical steps are introduced, which are applied in the analysis. These include (1) the preprocessing of the press releases, (2) the calculation of term frequencies ( $tf$ ) and (3)  $tf - idf$  weights as well as (4) the representation of documents through normalized vectors and (5) the calculation of theta cosine similarity scores between the latter. (6) Finally, based on the categorization dictionaries of Loughran and McDonald (2011), a procedure is introduced to examine the tone and sentiment of each type of document analyzed.

The results of the analysis described above show that the calculation of cosine similarity scores proves to be an effective tool to identify clusters of documents referring to similar underlying characteristics. Furthermore, the calculation of  $tf$ s and  $tf - idf$  weights and the analysis of the characteristics of the corresponding words shows that one can identify structural words by the former and the actual content of the structural terms by the latter. Though in the case of Novartis, the  $tf$  word lists indicated strategically important, but abstract, attributes for the different types of transactions, whereas the  $tf - idf$  lists identified rather specific drugs or therapeutic fields of interest. Less informative results can be derived from the analysis of potential differences in the language used, depending on the specific underlying transaction type.

Thus the text-based analysis reveals underlying patterns in Novartis's transaction behavior and specific characteristics for each type of transaction. In terms of Novartis's acquisition behavior it should be noted that the company divested a series

of largely unrelated business units in the field of animal health, agribusiness, and nutrition and food, and thus consolidated its business significantly. However, Novartis simultaneously avoids being a pure-play classic branded pharmaceutical company as it has entered a wide variety of new business segments within the healthcare sector through the acquisitions it has conducted. Most remarkable in this context is the series of acquisitions Novartis has conducted in the generics segment. The big acquisitions of Alcon and the acquired OTC business from Bristol-Myer-Squibb are also remarkable examples of fairly low-risk and diversification-oriented M&A behavior, however.

These results and their interpretations are consistent with the insights gained from the analysis of Novartis's alliance and licensing behavior. Novartis seems to engage in alliances primarily in order to participate in the development and discovery of new technological and therapeutic fields, and has also significantly increased its licensing activity over the past years. In the context of increased regulatory and R&D risks in the pharmaceutical environment, Novartis therefore seems to try to reduce its risk exposure by diversifying its business and outsourcing substantial parts of its R&D activities.

This thesis contributes to both the emerging field of text-based research and the established M&A literature. However, while applying this methodology to this kind of research question for the first time, the analysis also identified methodological challenges and peculiarities, which underline the explorative character of this examination. They also suggest potential areas for improvement and methodological refinement for further research in the field of text-based research.