REPUTATIONAL CAPITAL AND OPERATING PERFORMANCE: A PRESS MEDIA APPROACH

by

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ABSTRACT

This paper examines the association of corporate reputation and operating performance on a balanced panel data sample of 49 FTSE UK firms over the period 2005-2015. Analysing 169,994 news media articles from four main UK newspapers (*Financial Times, The Times, The Guardian* and *The Mirror*), I construct a novel corporate reputation measure advancing methodologically the conceptualisation of this important intangible asset. Next, the association of corporate reputation and operating performance (ROA, EBITDA), as well as with profit drivers (sales, profit margin, operating expenses and salaries expenses) are investigated. Results from regression analysis provide evidence that corporate reputation has a strong positive association with operating performance, sales growth and profit margins and outperforms Britain's Most Admired Companies ranking (used as a benchmark) as an explanatory variable. However, the study was not able to provide any evidence of a significant association between corporate reputation and operating expenses or salaries expenses. Nevertheless, this study contributes to the academic literature on unrecorded intangible assets by introducing a new (objective) measure of corporate reputation and providing evidence of its association with operating performance through various profit drivers.

KEYWORDS: Corporate Reputation, Operating Performance, Textual Analysis, News Media Articles

INTRODUCTION

Today, corporate reputation is one of the main value-drivers of corporate performance and can be seen as an important intangible asset affecting financial outcomes worldwide (Roberts and Dowling, 2002; Sarstedt et al., 2013; Deephouse et al., 2016). Overall, researchers view corporate reputation as a strategic, complex and hard-to-imitate resource which allows firms to gain a sustained competitive advantage (Barney, 1991; Deephouse, 2000) and to maintain a superior position (de Castro et al., 2006). In line with this idea, Hall (1992) finds that corporate reputation takes several years to be shaped and that it is one of the resources which it is most difficult to accumulate, suggesting as well that long-term effects might play an important role. However, current accounting standards do not recognise corporate reputation as an asset mainly due to reliability and measurement concerns. While this policy is justified under the common accounting framework, there still exists strong evidence that reputation is valuable in business.[1]

The reputation of a corporation among various stakeholders (e.g. customers, suppliers, employees) can have an impact on the corporation's operating performance because it is closely connected to various stakeholders' expectations and decisions. A potential customer might take into consideration the reputation of the corporation (or its products and/or services) before making its consumption decision. Similarly, a company's supplier might restrict its credit lines if a customer has a bad financial reputation. And lastly, employees might take into consideration the reputation of a potential employer before applying for and/or accepting a job offer. This study attempts to connect corporate reputation with operating performance using an innovative press media measure of corporate reputation.

Various studies have highlighted the importance of corporate reputation and its impact on firm performance (Fombrun and Shanley, 1990; Deephouse, 2000; Roberts and Dowling, 2002; Cao et al., 2015) providing strong evidence that reputation is a key corporate resource. However, most of these studies rely on corporate reputation rankings based on survey among executives or analysts only, and are therefore restricted to only few stakeholders' perception and opinion. This study overcomes this limitation by analysing news media articles, which are more objective in its nature than CEO surveys. There is no doubt that executives and analysts are important stakeholders, yet not the only one. This study

[1] The importance of reputation as an important source of information for decision making has not gone unnoticed by the public media. Several reputation rankings are available online (e.g. http://www.telegraph.co.uk/business/2017/07/04/10-worst-companies-work-uk-according-employees/, https://www.forbes.com/2009/04/28/america-reputable-industries-leadership-reputation.html#4c93886cc085).
The increasing popularity of corporate reputation rankings can also be observed over time. Fombrum (1998) listed 17 reputation rankings while nine years later Fombrum (2007) listed 183 rankings, worldwide.

attempts to broaden the perspective on corporate reputation by using news media releases, which are accessible and of interest to various stakeholders (e.g. customers, suppliers, authorities, investors, employees) and not only restricted to one or two groups of stakeholders.

In the management sciences, reputation has been highlighted as one of the key corporate resources from which a firm can gain a sustained competitive advantage (Barney, 1991; Deephouse, 2000). More specifically, a good reputation is very valuable because it allows firms to charge premium prices for their products or services (Shapiro, 1983), reduce transaction costs (Deephouse, 2000) and attract highly qualified employees (Turban and Cable, 2003). In contrast, a negative corporate reputation may lead to a decrease in sales or revenues and higher operating or financing costs (Dowling, 2001; Fombrun and Shanley, 1990). Altogether, this might influence significantly the operating performances of corporations over time.

In this study, news media articles from four main UK newspapers (*Financial Times*, *The Times*, *The Guardian* and *The Mirror*)[2] are analysed and matched to each individual firm. The sentiment of each article is measured and, grouped by firm and year, a firm index is computed for each year by taking into consideration all articles related to the firm. The firm sentiment for the three previous years (t-1, t-2, and t-3) constitutes the corporate reputation measure. Using the lagged media articles makes it technically impossible that current (e.g. quarterly) financial results influence this corporate reputation measure. This conservatism is also motivated by Ferguson et al. (2015), which provides evidence that media content from newspapers has a significant impact on firm performance. This study attempts to examine whether past media content, as an objective measure of corporate reputation, affects operating performance, as well. This extends the existing corporate reputation literature which mainly depends on *Fortune* (or in the UK, *Britain's Most Admired Companies*[3]) rankings based on executive surveys which only represent the corporate reputation opinion of one single group of stakeholders (CEOs). First, this study attempts to overcome this limitation, using news media articles as a more objective piece of information measuring

[2] The news media articles include print and digital versions of all four newspapers. An additional concern might arise about the validity of the inclusion of the *The Mirror*, due to its rather popular or simplistic informational content. The author acknowledges the potential heterogeneous informational quality of the content among the four different newspapers. However, this study does not focus on the informational quality or the timeliness of the content, rather it focuses on past articles from established newspapers with a high circulation rate. In January 2018, *The Mirror* (as the *Daily Mirror* and *Sunday Mirror*) had a cumulative circulation of 1,090,058, *The Times* (as *The Times* and *The Sunday Times*) had a cumulative circulation of 1,180,403, *The Guardian* 152,714 and *The Financial Times* 189,579 (http://www.newsworks.org.uk/market-overview; https://www.abc.org.uk/data/reports-and-analysis). If the measurement of the quality of the information is not the main objective of the study, as is the case here, *The Mirror* earns its inclusion to this study by its high circulation rate and its potential influence on shaping corporate reputation.

[3] The annual ranking is done by Professor Michael Brown and associates at Leeds Business School and is available online: https://www.managementtoday.co.uk/bmac-2017.

corporate reputation. This in turn should providing a more sophisticated general measure of corporate reputation reflecting its multidimensional nature for various groups of stakeholders. Second, this study provides evidence that corporate reputation is significantly associated with various profit drivers (sales, profit margin).

Combining the textual analysis methodology with the corporate reputation literature, this study investigates the long-term effect of reputational capital on operating performance on a sample of 49 FTSE UK firms by using a measure of the sentiment expressed in news media articles as a proxy for corporate reputation. In this study, corporate reputation is measured through a textual analysis of widespread news media articles. Relying on mass media articles has the advantage that numerous people from all levels of the society have access to the information content. In addition, very often, printed-news articles are also reported on television and the internet, or vice versa. This linkage assures that the information content of these news articles spread nationally and internationally, with a significant influence on the reputation-building of firms. Previous studies (Tetlock, 2007; Tetlock et al., 2008; Ferguson et al., 2015) find that news media articles contain relevant information, influencing firm performance.

The first step in measuring corporate reputation consists in the analysis of each individual news media article in terms of its positive and negative words in order to measure its overall sentiment. In each article, the number of negative words is compared to the number of positive words and the difference determines the negative or positive sentiment of the article. In contrast to Tetlock et al. (2008), this study does not focus on the association between the sentiment of each article and firm performance. Instead, it attempts to derive an overall firm sentiment value over a specific period, on a yearly basis. For this purpose, all sentiment articles within one year are summed to one single yearly firm-specific sentiment together. A firm with a negative (positive) sentiment index in any given year is assumed to have experienced a decrease (increase) in reputation in that year.

In summary, the main contribution of this study to the literature is the novel measure of reputational capital by analysing news media articles and their connection with operating performance. This measure does not rely on private CEO information and can also be applied in countries without *Fortune* rankings. In addition, a detailed analysis of specific profit drivers and their association with corporate reputation is added to the literature.

LITERATURE REVIEW

Corporate reputation

Corporate reputation can be defined as "the aggregation of a single stakeholder's perception of how well organizational responses are meeting the demands and expectations of many corporate stakeholders" (Wartick, 1992, p. 34). In a similar vein, de Castro et al. (2006, p. 362) define corporate reputation as "the collective representation of actions and outcomes of the past and present of the organization that describe its capability to obtain valuable outcomes for different stakeholders". De Castro et al. (2006) refer mainly to employees, managers, shareholders, customers, suppliers as well as society in general as relevant stakeholders of a firm. Taking a wider perspective, Wartick (1992) refers to Freeman (1984) who defines stakeholders as any group or individual who can affect or is affected by the achievement of the organisation's objectives. These definitions make it very clear from the beginning that reputation is based on a variety of stakeholders and not simply on the opinions of managers or analysts.

Combining these definitional perspectives, corporate reputation, in this study, is defined as the aggregation of a variety of different stakeholders' perceptions on a firm based on the present and past actions and outcomes.

In the academic literature, several studies investigate the formation of reputation and its association with firm performance. As one of the first, Fombrun and Shanley (1990) study the public construct of corporate reputation using a sample of 292 US firms and their *Fortune 500* ranking and link it to various performance measures. More specifically, they find that reputation may enable firms to charge premium prices on their products and services, attract better employees, facilitate access to capital markets and attract the interest of investors. Deephouse (2000) investigates the impact of corporate reputation on operating performance in the banking industry. Using a sample of 121 independent banks from 1988 to 1992, he finds that *Fortune* reputation rankings are a viable source of information for explaining differences in operating performance. Roberts and Dowling (2002) collect *Fortune* reputational data from 1984 to 1998 in relation to *America's Most Admired Corporations*. This annual reputation ranking covers 1,000 firms and is based on opinions from executives, directors and analysts. Overall, the study provides solid evidence that a good reputation enables a firm to sustain superior profits as measured by Return on Assets (ROA). In a more recent study, Cao et al. (2015) find strong evidence that companies with good reputation have lower cost of equity, using a sample of 9,276 US companies listed on *Fortune's* ranking.

All of these studies use company rankings (e.g. *Fortune*) as a proxy for corporate reputation. However, these rankings are based on surveys among executives and analysts who represent only a

fraction of all stakeholders in a firm (Barnett and Pollock, 2012; Doh et al., 2010). Without doubt, using the *Fortune* rankings has its merits but it seems to be a novel attempt to measure reputation not only relying on the opinions of CEOs and analysts alone.

Some studies with similar research topics (Carmeli and Tishler, 2005; Coombs, 2007) use an alternative reputation measures. They also confirm that corporate reputation can attract customers, generate investment interest among investors, attract talented employees and garner positive comments from financial analysts, without relying on *Fortune* rankings, what distinguishes them from the previous corporate reputation studies. While Carmeli and Tishler (2005) use a sample of 263 public authorities in Israel, Coombs' (2007) study is theoretical, highlighting how reputational capital is actively managed in crises and how most information which stakeholders collect about organisations is derived from the news media. These findings provide not only evidence that corporate reputation affects firm performance but also that news articles are, to a large extent, forming and shaping corporate reputation. In addition, this also suggests that there is an interaction between corporate reputation and various profit drivers (e.g. sales, operating and salary expenses).

From a more theoretical perspective, de Castro et al. (2006) focus on the conceptual delimitation and multidimensionality of corporate reputation. The authors use a framework to identify various components of corporate reputation: (1) Managerial, product and financial reputation; (2) internal and external reputation; (3) business and social reputation. Lange et al. (2011) provides an extensive review on academic research on reputation based on three dimensions: (1) being known, (2) being known for something, and (3) generalized favourability. These studies offer interesting perspectives on the decomposition of corporate reputation into various subcomponents but this is not within the scope of this study. Hence, corporate reputation, throughout this study, is referred to as a single concept.

Analysis of news media articles

In general, media articles contain positive and/or negative news stories about markets, industries, firms, or products. This source of information is easily available to a large number of investors, employees, customers, suppliers and other stakeholders and is, therefore, an appropriate data source for investigations on firm reputation. Mass media articles reach thousands if not millions of people all over the world and actively shape the reputations of firms. In addition, journalists aim to publish news in which readers are potentially most interested, in order to achieve higher article reads and sales. Given this relational incentive, journalists are continuously searching for current (positive and negative) news and investigating on the 'hottest' topics. Therefore, it can be assumed that news articles are relatively timely

and objective sources of information. Lastly, the fact that media articles have the highest potential for being interesting to a variety of stakeholders limits the need to dredge for context-specific anomalies (Tetlock et al., 2008).

In the last decade, several studies analysed the information content in news media articles and linked them to firm performance and price movements.[4] One of the first studies investigating the interactions between media content and stock market activity was Tetlock (2007). This study uses the *Wall Street Journal* column to quantitatively measure the relationship between media and the stock market, on a day-to-day basis. He finds that high media pessimism predicts downward pressure on stock prices. In addition, unusually high or low pessimism predicts trading volume. Most importantly, these findings are consistent with the existence of noise and liquidity traders. Garcia (2013) confirms these findings by investigating positive and negative words in news columns from the *New York Times* over a century. Overall, the link between media content and industrial average returns is concentrated in times of recessions. Since both studies focus on industry performance, Tetlock et al. (2008) advances the literature by analysing individual firm-specific news media articles and link their content to individual firm performance. In total, they retrieve over 350,000 pieces of news from 1980 to 2004. Their main finding is that, in particular, negative words in the financial press predict low firm earnings and capture otherwise hard-to-quantify aspects of a firm's fundamentals. In addition, other studies (Engelberg, 2011; Loughran and McDonald, 2011; Bartov et al., 2015) find similar results.

All these studies use current information content contained in news media articles and test the association with price movements, earnings or firm performance. In general, this provides strong evidence that news media articles are a relevant source of information. In addition, they also qualify as a potential source as an accumulated perception of corporate reputation among all stakeholders (Fombrun and Shanley, 1990; Hutton et al., 2001; Carroll, 2004; Ferguson et al., 2015).

DEVELOPMENT OF HYPOTHESES

The objective of this study is to determine whether corporate reputation, measured through news media articles, has an association with operating performance. Under current accounting standards, corporate reputation is not recognised as an asset even though theory suggests that it has a significant influence on firm performance (Dowling, 2001; Fombrun and Shanley, 1990; Roberts and Dowling, 2002).

[4] For a more detailed review on textual analysis and its various sources, see Kearney and Liu (2014).

In this study, a new perspective on news media articles is taken in the sense that they form the basis of corporate reputation. Journalists working for newspapers are highly educated professionals investigating and reporting about business activities. In addition, professional journalists are obliged to report the truth due to their ethical code and the potential legal consequences in the case of misreporting. Hence, news articles published in widely-read professional newspapers paint a picture representing an accumulation of a firm's overall behaviour and a viable source for measuring corporate reputation. In comparison, analysts' reports or conference calls might be more timely pieces of information and the notes to financial statements might contain more detailed and reliable firm-specific information, but they are primarily of use to sophisticated investors, only. The information content of these sources might explain short-term movements in stock prices, returns or trading volumes very accurately but they lack any influence on other important stakeholders in a company (e.g. customers, employees). Customers, suppliers and unsophisticated investors might not use these sources and might not be aware of the information content included in these documents. It is reasonable to assume that an average iPhone user does not know if Apple Inc. made any changes to its bad debt expense estimates or met its quarterly earnings forecast. However, ordinary customers might read newspapers and might take into account any positive/negative news into their current or future consumption decisions. It should be noted that in this study no difference is made between different types (e.g. financial, environmental, and social) of news or different types of stakeholders (e.g. customers, investors, and suppliers). In addition, financial performance is an integral part of corporate reputation in this study. The main difference between this study and the existing literature, which has focused on financial performance only, is to broaden the measurement of corporate reputation, as theory suggests. This means that a firm might have big financial success but causing environmental damage to the society, and still have a positive reputation. Positive aspects of a firm might outweigh other negative ones. In practice, it would be very difficult to appoint different weights to different types of news or stakeholders. Hence, the sentiment analysis is the sole source of weighting news articles without human involvement from the author. The investigation of corporate reputation among various stakeholders (e.g. customers, employees, suppliers, and investors) separately exceeds the aim of this study and is left for future research.

Alternative information sources such as internet messages, Twitter, Facebook or internet blogs are also an important source of information on the overall sentiment among users regarding specific products or firms. However, these sources are unregulated, unaudited and therefore very noisy sources of information. It is true that news articles are also unregulated and, to a certain extent, unaudited, but journalists are professionals with an ethics code and a professional reputation to lose, and they face

potential legal penalties for any intentional misreporting. Hence, news media articles are definitely more objective and informative than these alternative sources, on average. In addition, it is likely that private online messages contain little new information that is incremental to published public news because they simply replicate information provided by newspapers, to a large extent. However, recent studies (Jung et al., 2016; Bartov et al., 2017) show that corporations use social media for interacting with stakeholders and that the information content in internet messages (e.g. Twitter) actively predicts price movements and/or earnings. Acknowledging these findings, it would be interesting to see whether news media articles contain similar information content as internet messages and if unregulated internet messages also shape corporate reputation. However, this is out of the scope of this study and is left for future research.

In summary, news media articles are an important source for specific information especially when focusing on reputation. Moreover, even if the actual articles analysed in this study might be read only by a subset of the overall stakeholder population, it can still be assumed that the information content will be spread anyway (e.g. television, online blogs, social media, and word of mouth). To support this, Shiller (2005) finds that news media actively shape public opinion and investment decisions. Hence, if sophisticated investors are influenced by news media articles then this should be true also for public opinions.

As pointed out in the previous sections, corporate reputation is supposed to have a positive association with operating performance, as the accounting measure of firm performance. Previous studies already pointed this out by a relatively large extend. This leads to the first hypothesis:

> ***H1:*** *Corporate reputation is significantly positively associated with current operating performance.*

While previous studies already provided evidence that corporate reputation has a positive association with operating performance, the setting in this study is of particular interest due to two reasons. First, previous studies mainly used reputation rankings based on executive or analysts opinions and are therefore more likely to show a positive relation. In comparison, a reputation based on news media articles has a much broader interpretation for various stakeholders and provides evidence that newspaper articles are containing relevant information. Second, as already anticipated, I use the lagged newspaper articles, which technically cannot reversely influence current operating performance, except through corporate reputation. Hence, the corporate reputation used in this study suffers less from endogeneity issues compared to previous measures.

As a second objective, this study attempts to investigate the association of corporate reputation and main profit drivers. This is an important aim because it allows to understand better where this association between operating performance and corporate reputation comes from. In addition, finding consistent evidence of an association between corporate reputation and operating performance, as well as between corporate reputation and various profit drivers, increases the robustness and reliability of the whole analysis. As pointed out previously, corporate reputation is formed by the perception, opinion and knowledge of a *variety* of stakeholders, and not only by top managers, investors or analysts. It is true that investors mainly drive the market performance of stock but also other stakeholders (e.g. customers, suppliers, employees) mainly influence the operating performances of the firm, especially in the long-run. Therefore, this study additionally investigates both, the revenue drivers (sales, profit margin) and the cost drivers (operating expenses, salaries expenses), with which corporate reputation might have an association.

The revenue drivers might have an association with corporate reputation mainly among current and future customers. Customers are important stakeholders for every business because, to large extent, their consumption decisions determine a firm's business success or failure. Customers buying products or services mainly take into account three factors: price, quality and reputation (Li et al., 2011). Particularly in competitive markets with rather similar prices and quality, reputation may serve as a crucial factor in influencing customers' final consumption decisions. In addition, a good reputation will reduce customers' sensitivity to price and, therefore, increase sales revenue and profit margin (Kossovsky, 2012). Firms with a relative good reputation are supposed to have higher sales revenue and profit margins. This reasoning leads to the second and third hypotheses:

H2: *Corporate reputation is significantly positively associated with current sales growth.*

H3: *Corporate reputation is significantly positively associated with current profit margin.*

The next set of hypotheses focus on the association of corporate reputation and cost drivers. Suppliers and employees are also crucial stakeholders in business because they play an essential role in the supply chain and may significantly influence the performance of a firm. Suppliers might want to prioritise firms with a good reputation, provide them first access to new products or services and offer them cost reduction opportunities (Kossovsky, 2012). Overall, being a preferred customer has the potential to deliver value equivalent to an additional 2-4% savings off the firm's total expenditure (Bew,

2007). Employees' decisions may also be affected by a firm's reputation. For example, Apple's retail employees are extremely effective in retail operations compared to those of other companies in this industry, which, in part, can be explained by the firm's reputation (Kossovsky, 2012). In addition, Turban and Cable (2003) also find that firms with better reputation attract not only more applicants but also higher-quality applicants for vacant positions. This does not only influence sales or profit margins positively but potentially also allows firms with a good reputation to decrease their operating expenses due to increased employee efficiency. In contrast, firms with a bad reputation might be able to hire talented employees but only at a higher cost, representing a financial compensation premium for negative reputation (e.g. tobacco or arms industries). Hence, the fourth and fifth hypotheses focus on operating expenses and employee compensation:

> ***H4:*** *Corporate reputation is significantly negatively associated with current change in operating expenses.*

> ***H5:*** *Corporate reputation is significantly negatively associated with current changes in salaries expenses.*

METHODOLOGY

Data and Corporate reputation

The empirical analysis of this study investigates the association between reputational capital and operating performance as well as some of its profit drivers. The sample consists of 49 UK firms listed on the FTSE 100 Index[5] from 2006 to 2015, with 490 observations in total. The sample is reduced from the initial 100 FTSE firms because of the exclusion of financial and service firms (exclusion of 27 firms) and because of the methodological balanced panel design choice (exclusion of additional 24 firms). The advantage of using a balanced panel is that it reduces the collinearity among explanatory variables and improves the efficiency of the econometric estimates (Hsiao, 2003). Thus, 24 firms with fewer than 10 observations each in the 2006 to 2015 timeframe are excluded. In other words, a balanced panel makes the analysis more consistent and reduces the noise introduced by firm heterogeneity.[6] While it is true that this decision includes a potential survivor bias in the sample, it is most likely that this bias goes against the

[5] As of 09/18/2017.

[6] Including these 24 excluded firms would add 143 observations to the analysis; however, this would be at the cost of having an unbalanced panel.

hypotheses proposed in this study. Liquidated or acquired firms during this period (e.g. financial crisis) are excluded from the analysis, which are more likely to become significant outliers and influence the analysis. Excluding these cases, in turn, should support the '*Null*' in all hypotheses, and ensure that the estimates are relatively conservative.

On the final sample of 49 FTSE firms, news media articles from four major UK newspapers are used to measure reputational capital. In a recent study, Ferguson et al. (2015) argue that news media articles play an important role in shaping investors' views of the stock market and provide relevant information to market participants. Following Ferguson et al. (2015), news articles from *The Financial Times*, *The Times*, *The Guardian* and *The Mirror* have been hand-collected through the LexisNexis database. These four prominent newspapers influence public opinion on a large scale and should be representative of the media presence of large and medium-sized UK firms. Most of these firms are not only known among investors but also to the majority of all other stakeholders. Hence, these firms are most likely to have some (positive or negative) corporate reputation among all stakeholders and not only among sophisticated investors, CEOs or analysts. As a natural benchmark the annual rankings of *Britain's Most Admired Companies* (BMAC) seem appropriate. Most of the companies used in this study are also available in the BMAC ranking. Unfortunately, the first yearly ranking could be found only for 2009, which drops the number of observations from 490 to 254, when making the comparison between BMAC ranking and the proposed reputational measure introduced in this study.

As a standard procedure in content analysis (Tetlock et al., 2008; Ferguson et al., 2015), all articles in this study are analysed to determine the number of positive and negative words they contain. The words in each article are matched to the Loughran and McDonald (2011) Master Dictionary.[7] It is true that there exist various other dictionaries like the Harvard Psychosociological Dictionary, which has been used in previous studies. However, Loughran and McDonald (2011) find that many negative words in these alternative dictionaries do not necessarily have a negative meaning in financial contexts. Thus, the Loughran and McDonald Master Dictionary seems most appropriate for analysing financial documents or business news articles, consistent with the purpose of this study. Ferguson et al. (2015) follow the same reasoning in their UK mass media study. Following previous studies, the positive and negative content of each single news article is measured as follows:

[7] The authors update the Master dictionary continuously; therefore, I use the most recent version from 2014, including 2,355 negative and 354 positive words. The dictionary is available at: http://www.nd.edu/~mcdonald/Word_Lists.html

$$Positive\ content_{i,t,a} = \frac{number\ of\ positive\ words_{i,t,a}}{total\ number\ of\ words_{i,t,a}} \quad (1)$$

$$Negative\ content_{i,t,a} = \frac{number\ of\ negative\ words_{i,t,a}}{total\ number\ of\ words_{i,t,a}} \quad (2)$$

Where $number\ of\ positive\ (negative)\ words_{i,t,a}$ is the number of positive (negative) words for firm *i*, in year *t*, for article *a*, and $total\ number\ of\ words_{i,t,a}$ is the total number of words for firm *i*, in year *t*, for article *a.*

The overall sentiment of the article is determined by the difference between the *Positive content* (equation 1) and *Negative content* (equation 2) measures:[8]

$$ArticleSentiment_{i,t,a} = \frac{number\ of\ positive\ words_{i,t,a} - number\ of\ negative\ words_{i,t,a}}{total\ number\ of\ words_{i,t,a}} \quad (3)$$

The focus of this study, however, is not on the impact of the Sentiment of each article on firm performance but the overall association of corporate reputation with operating performance. The reputation of a firm is measured by cumulating Sentiment for all news articles related to the firm over one year, representing an overall yearly sentiment index.[9]

$$Sentiment_{i,t} = \frac{\left(\sum Sentiment_{i,t,a}\right)}{total\ number\ of\ yearly\ firm\ articles_{i,t}} \quad (4)$$

where $Sentiment_{i,t}$ is the cumulative yearly Sentiment score for firm *i*, in year *t*. Previous studies (Tetlock et al., 2008; Ferguson et al., 2015) used similar Sentiment measurements when analysing news media articles in the US and the UK.

[8] As pointed out previously, other studies (Tetlock, 2007; Loughran and McDonald, 2011; Bartov et al, 2015) only use the negative word lists to capture article sentiment. All empirical analyses in the next section have been repeated (non-tabulated) using the negative word lists only. The results remain qualitatively unchanged.

[9] Some alternative measurements (number of positive and negative sentiment articles and the net of these article counts) of CorpRep are included in the descriptive statistics.

Next, to investigate the association between corporate reputation and operating performance, the Sentiment variables for the previous 3 years are used to form the main variable of interest, *CorpRep*.

$$CorpRep_{i,t} = Sentiment_{i,t-1} + Sentiment_{i,t-2} + Sentiment_{i,t-3} \quad (5)$$

$CorpRep_{i,t}$ is the corporate reputation estimate for firm *i*, in year *t*, and is the main explanatory variable of interest in this study. As previously highlighted, the sentiment information in lagged news media articles proxies for corporate reputation and should not have any association with current operating performance except through corporate reputation. As a robustness check, current sentiment, $Sentiment_{i,t}$, is added as an explanatory variable in the regressions, which should change the coefficient estimates significantly if $CorpRep_{i,t}$ has no additional information value.

Corporate reputation and operating performance

The main objective of this study is to investigate the association between corporate reputation and operating performance. Return on Assets (and EBITDA as an alternative) is a plausible proxy for operating performance in the accounting literature.

All financial data variables (e.g. sales, total assets, operating expenses) are downloaded from Datastream (Thomson Reuters). Since corporate performance is influenced by various (omitted) factors, some prominent control variables for growth, size, trading volume and corporate social responsibility (CSR) activity are added to the regression equation. Similar control variables have been used by Tetlock et al. (2008) and Ferguson et al. (2015).

The first hypothesis is tested with the following cross-sectional regressions with firm fixed and year fixed effects:

$$ROA_t = \alpha + \beta_1 CorpRep_t + \beta_2 \left(\frac{B}{M}\right)_t + \beta_3 \text{Size}_t + \beta_4 Turnover_t + \beta_5 CSR_t + \varepsilon_t \quad (6)$$

where ROA_t is the yearly net income divided by total assets, $CorpRep_t$ is the corporate reputation index as the three-year lagged cumulative article sentiment, Size_t is the natural logarithm of total assets, $\left(\frac{B}{M}\right)_t$ is the book-to-market ratio, $Turnover_t$ is the natural logarithm of share trading volume, CSR_t is a dummy

variable with the value 1 if the firm issues a separate corporate social responsibility report in year t, respectively.[10]

Further analyses focuses on profit drivers, as sales/revenues, operating expenses, gross profit margin and salaries expenses. These detailed analyses should provide more insights through which channels corporate reputation is affecting (if at all) operating performance.

Corporate reputation and profit drivers

Theory suggests that reputational capital can allow firms to gain a sustained competitive advantage (Barney, 1991; Deephouse, 2000). However, it remains an open question which factors drive the effect of corporate reputation on operating performance. Hypotheses 2 to 5 investigate the profit drivers behind operating performance. This allows a more sophisticated investigation and interpretation of reputational impact on operating performance.

Hypotheses 2 and 3, are tested by running the following cross-sectional regressions with firm fixed and year fixed effects, respectively:

$$\%\Delta Sales_t = \alpha + \beta_1 CorpRep_t + \beta_2 \left(\frac{B}{M}\right)_t + \beta_3 \text{Size}_t + \beta_4 Turnover_t + \beta_5 CSR_t + \varepsilon_t \quad (7)$$

$$ProfMrg_t = \alpha + \beta_1 CorpRep_t + \beta_2 \left(\frac{B}{M}\right)_t + \beta_3 \text{Size}_t + \beta_4 Turnover_t + \beta_5 CSR_t + \varepsilon_t \quad (8)$$

where $\%\Delta Sales_t$ is equal to the percentage change in sales between years t and t-1, $ProfMrg_t$ is profit margin[11], and all other variables remain as previously defined.

As discussed in the previous section, corporate reputation may also influence a firm's expenditures, hypotheses 4 and 5 are tested by the following cross-sectional fixed-effects regressions using operating expenses and salary expenses as dependent variables:

$$\%\Delta OpExp_t = \alpha + \beta_1 CorpRep_t + \beta_2 \left(\frac{B}{M}\right)_t + \beta_3 \text{Size}_t + \beta_4 Turnover_t + \beta_5 CSR_t + \varepsilon_t \quad (9)$$

[10] The subscript *i* for each individual firms has been neglected for simplicity and readability of the study.

[11] Net income to common shareholders / Net sales or revenues

$$\%\Delta SalExp_t = \alpha + \beta_1 CorpRep_t + \beta_2 \left(\frac{B}{M}\right)_t + \beta_3 \text{Size}_t + \beta_4 Turnover_t + \beta_5 CSR_t + \varepsilon_t \quad (10)$$

where $\%\Delta Op.Exp_t$ is the percentage change in total operating expenses between years t-1 and t. In the same fashion, and $\%\Delta SalExp_t$ is the percentage change in salaries expenses between years t-1 and t. All other variables remain as previously defined.

In terms of sign predictions, the existing literature, reviewed in the previous sections, makes some concrete forecasts. As already pointed out by previous studies, the β_1 coefficient estimates of equations (6), (7) and (8) are expected to be positive and significant. In contrast, for equations (9) and (10), the expected coefficient sign is expected to switch to negative for all β_1 estimates, due to the dependent variable being an expense.

RESULTS

Descriptive statistics

Table 1 provides the full sample of 49 FTSE UK firms and the corresponding news article counts for the four newspapers (*FT, Times, Guardian,* and *Mirror*) used in this study. In total 169,994 individual newspaper articles are analysed from 2003 through 2015, characterised by a heterogeneous distribution among the companies. In particular, *Marks and Spencer Group PLC* alone accounts for 14.1% of all newspaper articles, whereas *DCC PLC* has only 20 newspaper articles over the whole observation period, representing only 0.01% all articles. This reveals that media coverage varies a lot among firms in the UK with a max/min ratio of approximately 1,199.

[INSERT TABLE 1 HERE]

Table 2 provides additional time-series statistics about the articles being analysed. First, 2010 and 2003 had the highest and lowest number of newspaper article publications with 16,239 and 10,001 documents, respectively. The Financial Times (FT) and The Guardian contribute the most articles to this study with 58,614 and 55,687, respectively. The Mirror is the newspaper with the lowest article contribution 19,833, representing only 11.7% of all newspaper articles analysed. Interestingly, a general

trend of decreasing (increasing) numbers of articles can be observed for the FT (The Times), which indicates that the FT (The Times) is decreasing (increasing) its relative firm-specific news coverage.

[INSERT TABLE 2 HERE]

Descriptive statistics for the financial variables are given in Table 3. A first glance at the summary statistics reveals that operating performance (ROA) has a mean of 8.6% and a standard deviation of 6.5%. Furthermore, sales growth and the salaries expense growth have both a higher mean value and volatility compared to the profit margin growth and the operating expense growth. Lastly, the control variables book-to-market (B/M), logarithm of total assets (Size) and logarithm of trading volume by shares (Turnover) complete the financial variables for this study.

[INSERT TABLE 3 HERE]

The next set of descriptive statistics focus on the sentiment variables derived from the textual analysis of 169,994 newspaper articles downloaded from the LexisNexis database. Table 4 presents the summary statistics for corporate reputation (CorpRep), the main variable of interest in this study. The average and the median of CorpRep are identical with -3.4%, providing evidence that the investigated newspaper articles report on average a majority of negative sentiments. However, as already pointed out previously, the Loughran and McDonald (2011) Master Dictionary contains 2355 negative words and only 354 positive words. This unbalanced word count may explain why, on average, a negative sentiment is observed for the majority of all newspaper articles analysed. A very similar pattern is observed for the Sentiment in year t, t-1, t-2 and t-3 because CorpRep is the sum of the latter three distributions. Sentiment in year t has not been used as an explanatory variable due to the potential confounding effect with the dependent variables.[12] Again, the mean and the median are almost indentical and the extreme observations are rather similar, too. Since, CorpRep is the sum of Sentiment in year t-1, t-2 and t-3, its values are broader distributed which give more variation to the variable. All other variables in Table 4

[12] In untabulted tests the Sentiment for year t showed a significant association with most dependent variables. Hence, a good and cautious decision was made for not including this variable for defining corporate reputation.

(PosArticles, NegArticles and NetArticles) just provide additional information about the number of articles with positive and negative Sentiment and their difference scaled by their sum, respectively.

To sum up, there is a severe heterogeneity of media attention in the UK, with the company with the highest media attention receiving almost 1,200 times more news media articles than the company with the lowest attention in this study. In terms of newspaper publications, The Financial Times and The Guardian contribute the most articles to this study, even if also The Times increased its relative share in recent years. CorpRep has a negative mean and median what might be driven by the unbalanced word count within the Loughran McDonald (2011) Master dictionary.

Table 5 provides the correlation matrix of the main variables of interest. CorpRep is mechanically highly correlated to the sentiment variables in years t-1, t-2 and t-3 due to its computation. More interestingly, most dependent variables are significantly correlated to CorpRep providing first evidence of an underlying association between them. First, CorpRep is significantly correlated with ROA, sales growth and profit margin, whereas the correlation with growth of operating expenses and salaries expense growth is zero and marginally negative. Especially the correlation between CorpRep and ROA as well as with sales growth exceeds 20% and is statistically significant. It should also be noted that the correlation among lagged three years' sentiments with ROA is steadily decreasing from 24.1% to 17.2% and 8.7%, respectively. For various other variables (e.g. sales growth) similar patterns appear. Hence, all three lagged sentiment years have a significant correlation with most of the dependent variables, which justifies the inclusion of these variables in the CorpRep measurement variable. Even though, it can mainly observed that the most recent lagged sentiment (t-1) has the strongest association with the dependent variables in place. Lastly, the size of a firm and its share trading turnover is negatively correlated with CorpRep. This gives some evidence that larger firms have more media coverage than small firms and are therefore more exposed to the overall negative news article sentiment. Similarly, firms with higher trading volume seem to have a lower CorpRep measure.

[INSERT TABLE 5 HERE]

Corporate reputation and operating performance

Turning now the attention to the main focus of this study, the association of reputational capital and operating performance. Table 6 presents the regression results considering ROA as the dependent variable, including controls as well as firm fixed and year fixed effects. Column (1) and (2) present the

coefficient estimates for current sentiment and the main variable of interest, CorpRep, respectively. Both coefficients are positive, as expected, and statistically significant. Column (3) confirms the findings in the sense that both coefficient estimates remain significantly unchanged if used in the same regression equation. Considering the traditional BMAC (*Britain's Most Admired Companies*) rankings, column (4) provides evidence of a statistically significant relation with ROA. In addition, the coefficients for BTM and Size are consistently negative in all four regressions, providing evidence that larger and value firms have lower operating performance, on average. Overall, hypothesis 1 is confirmed.

[INSERT TABLE 6 HERE]

Corporate reputation and profit drivers

As pointed out previously, one of the main contributions to the literature of this study is the investigation of corporate reputation on various profit drivers (sales, profit margin, operating expense and salaries expenses). Table 7 reports the regression estimates for equation (7) on sales growth. As can be seen in column (2) and (3), CorpRep has a positive association to sales growth. While the current sentiment is still marginally significant, the BMACIndex has no statistically significant relation with sales growth. This provides evidence that CorpRep is capturing information which is, at least partially, not captured by current sentiment and the corporate rankings. Considering the control variables, again only BTM and Size have a significant association. However, while the BTM coefficient remains negative, Size has now a positive coefficient. Altogether these findings lead to the acceptation of hypothesis 2.

[INSERT TABLE 7 HERE]

Table 8 is investigating the relation of corporate reputation and profit margin. As highlighted previously, theory suggests that firms with a better reputation can charge higher premiums and sustain higher profit margins. I do find confirmative results consistent with hypothesis 3 in column (2) and (3). The coefficient estimate is 0.532 and 0.539 and marginally significant providing evidence that firms with good reputation have higher profit margins. Column (1) and (3) show that current sentiment has also a

significant association with profit margin. However, BMACIndex again shows no significant relation. These findings allow to accept hypothesis 3.

[INSERT TABLE 8 HERE]

The next set of regressions focus on the effect of reputation through suppliers and employees. H4 focuses on the operating expenses as a dependent variable. Table 9 reports the regression results on the growth of operating expenses (scaled by sales). The coefficient estimates for current sentiment, CorpRep and BMACIndex are all insignificant. The only statistically significant estimates are for BTM and Size. Both showing evidence that larger firms and value firms have a higher growth of operating expenses. Unfortunately, no evidence can be provided that corporate reputation is associated to operating expenses growth. This argumentation leads to the rejection of hypothesis 4.

[INSERT TABLE 9 HERE]

The last profit driver to be investigated is salaries expenses. It is expected that firms with bad reputation have higher employee compensation costs because they have not only to compensate for the workload to be done but also for the bad reputation of their firm. Table 10 shows the regression results on salaries expense growth (scaled by the number of employees). Similar to the findings on operating expenses, none of the variables of interest show a significant association. In addition, also the all control variables fail to provide any supportive relations which also drops the explanatory power of the model to inexistence. Thus, the NULL hypothesis cannot be rejected at any conventional level and hypothesis 5 has to be rejected.

[INSERT TABLE 10 HERE]

Corporate reputation has an association with operating performance, sales growth and profit margin. Hence, having positive reputation in the media does influence operating performance, mainly through customers. However, no significant association between corporate reputation and operating

expenses (salaries expenses) was found. This could be interpreted as a sign that suppliers are not willing to prioritize companies with good reputation and employees, on average, are not willing to substitute part of their compensation by working for a company with a good reputation. An alternative argumentation is that firms with good reputation do not lower their salaries but instead they simply are able to hire higher qualified or motivated employees, which subsequently does influence operating performance positively, as has been seen in the study.

ROBUSTNESS CHECKS

To further investigate on the robustness of the finding presented in this study, I ran the identical regression analysis with two additional dependent variables [EBITDA and cumulative abnormal market return (CAR)] and one additional control variable (leverage). The results of these untabulated robustness checks are summarized briefly here.

First, EBITDA is used as substitute for ROA and the results concerning the variable of interest (CorpRep) hold and are statistically significant. Using CAR as dependent variable, tests indirectly the efficient market hypothesis since CorpRep, measured as the lagged three-year sentiment, should have no significant association with CAR if markets are efficient. Indeed, untabulted results provide evidence as expected. Only current sentiment has a statistically significant association with CAR, which confirms the finding by Ferguson et al. (2015). Considering the additional control variable, leverage, which is defined as the percentage of total debt to total capital, the results remain mainly unchanged. Only when testing H2, sales growth, the current sentiment turns out to be insignificant. CorpRep, the variable of interest, remains statistically and economically significant in all regressions.

Hence, the results presented in this study are robust against alternative operating performance measures and additional controls.

CONCLUSION

Prior studies in management have highlighted the importance of corporate reputation as a key intangible resource from which a firm can gain a sustained competitive advantage (Barney, 1991; Deephouse, 2000). More specifically, corporate reputation allows firms to charge premium prices (Shapiro, 1983), reduce transaction costs (Deephouse, 2000) and attract highly qualified employees. It might also affect sales/revenues as well as operating and financing costs (Dowling, 2001; Fombrun and

Shanley, 1990). However, previous empirical studies (Roberts and Dowling, 2002; Suh and Amine, 2007; Cao et al., 2015) exclusively use reputational rankings from *Fortune*'s list of *America's Most Admired Companies*. However, these ranking are based on surveys among CEOs or analysts only, so they are biased because they do not represent all stakeholders of a firm. In addition, in existing studies the concept corporate reputation might also mirror to large extend only the current financial performance observed by CEOs or analysts. Using news media articles from lagged years only, avoids this common caveat in previous studies.

This study attempts to overcome this limitation by introducing a new measure of reputational capital analysing news media articles from four main UK newspapers (*Financial Times*, *The Times*, *The Guardian* and *The Mirror*). In detail, corporate reputation is measured by a textual analysis of 169,994 news media articles from 2003 through 2015 of 49 FTSE UK firms.

Overall, the results provide evidence that corporate reputation has an association with current operating performance. More specifically, corporate reputation has a significant association with operating performance, including standard control variables, firm and year fixed effects. To better understand the linkages behind this positive association, the study also investigates the relation between corporate reputation and various profit drivers (sales, profit margin, operating expense and salaries expense). Consistently, a positive relation between corporate reputation and sales growth, profit margin was revealed. However, the results in the study do not support any significant association between reputation and growth of operating expenses, as well as growth of salaries expense. Thus, suppliers' terms of trade and employees' compensation have no association with corporate reputation, in this study. Nevertheless, the findings provide solid empirical evidence that corporate reputation has an association with operating performance, especially through sales growth and profit margins.

This study contributes to the corporate reputation literature by introducing a new (objective) measurement of reputation which does not rely on company rankings (e.g. *Fortune*) and does not mirror current financial performance, only. This measure can be applied in all countries with published news media articles and is also applicable for medium size corporations with some media attention. Lastly, detailed insights into various profit drivers associated with corporate reputation were provided, even if corporate reputation cannot be found in the financial statements.

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Figures and Tables

Table 1: FTSE UK Companies ranked by article count

Company	# of articles	%	FT	Times	Guardian	Mirror
MARKS AND SPENCER GROUP PLC	23,979	14.1	4,775	7,083	4,983	7,138
SEGRO PLC	13,651	8.0	3,443	3,005	4,834	2,369
INTERTEK GROUP PLC	9,712	5.7	3,319	3,168	1,915	1,310
SSE PLC	8,908	5.2	2,085	2,497	2,169	2,157
RIO TINTO PLC	8,637	5.1	4,200	2,661	1,682	94
GKN PLC	8,528	5.0	3,174	3,160	1,818	376
BAE SYSTEMS PLC	8,110	4.8	3,167	3,038	1,498	407
BHP BILLITON PLC	7,659	4.5	4,023	2,187	1,376	73
BP PLC	7,576	4.5	3,863	1,779	1,564	370
UNITED UTILITIES GROUP PLC	7,091	4.2	2,770	2,328	1,478	515
TESCO PLC	6,659	3.9	2,770	2,138	1,379	372
CENTRICA PLC	6,321	3.7	1,649	2,954	1,184	534
ASTRAZENECA PLC	6,156	3.6	2,267	2,414	1,261	214
EASYJET PLC	5,392	3.2	1,569	1,610	1,052	1,161
DIAGEO PLC	4,663	2.7	1,484	1,992	655	532
BT GROUP PLC	3,854	2.3	2,139	750	671	294
NATIONAL GRID PLC	3,834	2.3	1,158	1,538	844	294
J SAINSBURY PLC	2,839	1.7	517	1,747	388	187
RECKITT BENCKISER GROUP PLC	2,441	1.4	905	980	457	99
WPP PLC	2,418	1.4	1,053	657	637	71
BRITISH AMERICAN TOBACCO P.L.C.	2,338	1.4	937	862	434	105
SMITHS GROUP PLC	2,272	1.3	763	893	499	117
SMITH & NEPHEW PLC	1,721	1.0	423	579	445	274
HAMMERSON PLC	1,645	1.0	834	417	264	130
BARRATT DEVELOPMENTS PLC	1,612	0.9	478	694	401	39
RELX PLC	1,385	0.8	606	443	326	10
IMPERIAL BRANDS PLC	1,248	0.7	405	728	75	40
BURBERRY GROUP	1,084	0.6	338	373	271	102
SKY PLC	929	0.5	424	349	134	22
VODAFONE GROUP PUBLIC LIMITED COMPANY	918	0.5	257	394	161	106
JOHNSON MATTHEY PUBLIC LIMITED COMPANY	837	0.5	361	317	143	16
BERKELEY GROUP HOLDINGS PLC	729	0.4	261	191	182	95
PERSIMMON PLC	511	0.3	222	132	111	46
TAYLOR WIMPEY PLC	480	0.3	212	237	20	11
WOLSELEY PLC	453	0.3	179	98	107	69
GLAXOSMITHKLINE PLC	424	0.2	158	211	49	6
SEVERN TRENT PLC	403	0.2	164	156	79	4
G4S PLC	380	0.2	174	163	40	3
WHITBREAD PLC	368	0.2	167	112	73	16
COMPASS GROUP PLC	298	0.2	213	47	22	16
ANTOFAGASTA PLC	255	0.2	114	110	25	6
ASHTEAD GROUP PLC	253	0.1	106	121	20	6
UNILEVER PLC	241	0.1	122	35	69	15
THE SAGE GROUP PLC	187	0.1	67	111	9	0
INTERCONTINENTAL HOTELS GROUP PLC	162	0.1	62	85	15	0
MICRO FOCUS INTERNATIONAL PLC	150	0.1	43	75	32	0
CRH PLC	141	0.1	108	21	1	11
BUNZL PUBLIC LIMITED COMPANY	122	0.1	67	47	8	0
DCC PLC	20	0.01	19	0	0	1
TOTAL	169,994	100	58,614	55,687	35,860	19,833

This table lists all 49 FTSE UK firms used in this study.

Table 2: Summary statistics for the news media data

Year	Total Articles	FT	FT_%	Times	Times_%	Guardian	Guardian_%	Mirror	Mirror_%
2003	10,001	5,207	0.521	734	0.073	2,288	0.229	1,772	0.177
2004	12,979	5,606	0.432	3,178	0.245	2,274	0.175	1,921	0.148
2005	11,258	3,913	0.348	3,464	0.308	2,643	0.235	1,238	0.110
2006	11,819	4,724	0.400	3,322	0.281	2,703	0.229	1,070	0.091
2007	13,602	5,718	0.420	3,383	0.249	3,603	0.265	898	0.066
2008	12,450	5,844	0.469	2,763	0.222	2,822	0.227	1,021	0.082
2009	13,184	4,687	0.356	4,477	0.340	2,873	0.218	1,147	0.087
2010	16,239	5,242	0.323	5,677	0.350	3,641	0.224	1,679	0.103
2011	13,861	4,075	0.294	4,769	0.344	2,888	0.208	2,129	0.154
2012	15,786	3,618	0.229	6,947	0.440	2,728	0.173	2,493	0.158
2013	14,137	3,499	0.248	6,560	0.464	2,295	0.162	1,783	0.126
2014	13,154	3,725	0.283	5,264	0.400	2,734	0.208	1,431	0.109
2015	11,524	2,756	0.239	5,149	0.447	2,368	0.205	1,251	0.109
2003-2015	169,994	58,614	0.345	55,687	0.328	35,860	0.211	19,833	0.117

This table presents the summary statistics of the media data used in this study.

News articles are sourced from The Financial Times(FT), The Times, The Guardian, and Mirror.

The data covers 49 UK firms listed on the FTSE 100 from 2003 through 2015.

A total of 169,994 media articles were downloaded from LexisNexis.

Table 3: Descriptive Statistics for financial variables

	N	Mean	Sd	Min	Q1	Median	Q3	Max
ROA	490	0.086	0.065	-0.151	0.051	0.083	0.118	0.259
$\%\Delta Sales$	490	0.064	0.146	-0.355	-0.003	0.049	0.133	0.579
$\Delta ProfMrg$	490	0.002	0.052	-0.167	-0.013	0.0001	0.015	0.220
$\%\Delta OpExp$	490	0.002	0.050	-0.149	-0.017	-0.001	0.012	0.250
$\%\Delta SalExp$	490	0.046	0.151	-0.346	-0.017	0.028	0.084	0.990
B/M	490	0.448	0.401	-0.008	0.183	0.328	0.554	2.050
Size	490	15.964	1.285	12.671	15.007	15.838	16.967	18.977
Turnover	490	13.752	1.294	9.874	12.991	13.787	14.532	16.996

This table provides descriptive statistics for the dependent variables used in the main analysis. All variables are winsorized at bottom and top 1%.

Table 4: Descriptive Statistics for sentiment variables

	N	Mean	Sd	Min	Q1	Median	Q3	Max
$CorpRep$	490	-0.034	0.021	-0.121	-0.047	-0.034	-0.021	0.032
$Sentiment_t$	490	-0.013	0.009	-0.048	-0.017	-0.012	-0.007	0.014
$Sentiment_{t-1}$	490	-0.012	0.009	-0.048	-0.017	-0.012	-0.006	0.014
$Sentiment_{t-2}$	490	-0.012	0.009	-0.046	-0.016	-0.011	-0.006	0.012
$Sentiment_{t-3}$	490	-0.011	0.008	-0.045	-0.016	-0.011	-0.006	0.015
$PosArticles_t$	490	63.245	112.762	0	6.250	27.500	76.750	895
$PosArticles_{t-1}$	490	64.657	112.341	0	7.000	28.000	80.000	895
$PosArticles_{t-2}$	490	65.976	113.389	0	7.000	28.500	82.000	895
$PosArticles_{t-3}$	490	64.512	110.804	0	7.000	26.500	82.000	895
$NegArticles_t$	490	178.114	240.082	0	17.000	66.000	269.750	1,729
$NegArticles_{t-1}$	490	174.692	239.068	0	16.250	64.500	254.750	1,729
$NegArticles_{t-2}$	490	172.433	239.296	0	17.000	60.000	248.500	1,729
$NegArticles_{t-3}$	490	166.337	235.044	0	17.000	59.000	237.000	1,729
$NetArticles_t$	490	-0.395	0.269	-1	-0.583	-0.419	-0.232	0.600
$NetArticles_{t-1}$	490	-0.364	0.272	-1	-0.559	-0.386	-0.199	0.600
$NetArticles_{t-2}$	490	-0.351	0.266	-1	-0.543	-0.375	-0.196	0.600
$NetArticles_{t-3}$	490	-0.337	0.266	-0.947	-0.530	-0.353	-0.169	0.619

This table provides descriptive statistics for various sentiment measures used in the main analysis as explanatory variables.

Table 5: Correlation Table of main variables

	$Sentiment_{t-1}$	$Sentiment_{t-2}$	$Sentiment_{t-3}$	$CorpRep$	ROA	$\%\Delta Sales$	$\Delta ProfMrg$	$\%\Delta OpExp$	$\%\Delta SalExp$	B/M	$Size$	$Turnover$
$Sentiment_{t-1}$		0.578***	0.425***	0.812***	0.241***	0.208***	0.067**	-0.038**	-0.027**	-0.005	-0.376***	-0.288***
$Sentiment_{t-2}$	0.544***		0.572***	0.867***	0.172***	0.178***	0.006	0.029**	-0.008*	0.017**	-0.367***	-0.258***
$Sentiment_{t-3}$	0.433***	0.561***		0.801***	0.087***	0.14***	-0.013**	0.007*	-0.033**	0.031**	-0.353***	-0.284***
$CorpRep$	0.797***	0.851***	0.784***		0.203***	0.213***	0.024**	-0.001	-0.028**	0.017**	-0.442***	-0.334***
ROA	0.266***	0.214***	0.145***	0.253***		0.174***	0.106***	-0.205***	0.017**	-0.47***	-0.2***	-0.11***
$\%\Delta Sales$	0.251***	0.257***	0.194***	0.287***	0.132***		-0.016**	-0.151***	0.057**	-0.147***	-0.142***	-0.102***
$\Delta ProfMrg$	0.072**	-0.032**	-0.019**	-0.008*	-0.041**	0.185***		-0.497***	0.011*	-0.053**	-0.03**	0.008*
$\%\Delta OpExp$	-0.053**	0.039**	-0.003	0.003	-0.187***	-0.054**	-0.594***		-0.019**	0.149***	0.116***	0.043**
$\%\Delta SalExp$	-0.032**	-0.02**	0.043**	-0.01*	0.064**	0.211***	0.055**	-0.042**		-0.001	0	0.032**
B/M	-0.014**	0	0.024**	-0.013**	-0.518***	-0.038**	-0.089***	0.125***	-0.018**		0.062**	0.152***
$Size$	-0.413***	-0.388***	-0.387***	-0.461***	-0.176***	-0.198***	-0.085***	0.14***	-0.019**	0.055**		0.617***
$Turnover$	-0.253***	-0.211***	-0.249***	-0.27***	-0.118***	-0.06**	-0.061**	0.073**	0.051**	0.107***	0.575***	

This table reports univariate correlations. Pearson correlations are in the upper triangular and Spearman rank correlations are in the lower triangular.

p-values are based on two-sided tests. * indicates significance at the 10% level, ** indicates significance at the 5% level, and *** indicates significance at the 1% level.

Table 6: Predicting operating performance using Corporate Reputation

	Dependent variable:			
	ROA			
	(1)	(2)	(3)	(4)
AverageSentiment_t	1.379***		1.388***	
	(0.375)		(0.374)	
CorpRep		0.437**	0.445**	
		(0.204)	(0.201)	
BMACIndex				0.002***
				(0.001)
BTM	−0.055***	−0.061***	−0.050***	−0.038**
	(0.011)	(0.011)	(0.012)	(0.016)
Size	−0.043***	−0.051***	−0.045***	−0.033**
	(0.010)	(0.010)	(0.010)	(0.017)
Turnover	−0.001	−0.005	0.004	−0.037**
	(0.009)	(0.009)	(0.009)	(0.017)
CSR_RepY	−0.011	−0.011	−0.013	−0.038*
	(0.009)	(0.009)	(0.009)	(0.020)
Constant	0.856***	1.036***	0.831***	1.042***
	(0.209)	(0.204)	(0.208)	(0.333)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	490	490	490	254
R^2	0.561	0.552	0.566	0.534
Adjusted R^2	0.497	0.487	0.502	0.422
Residual Std. Error	0.046 (df = 427)	0.047 (df = 427)	0.046 (df = 426)	0.041 (df = 204)
F Statistic	8.800*** (df = 62; 427)	8.483*** (df = 62; 427)	8.817*** (df = 63; 426)	4.773*** (df = 49; 204)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 7: Predicting sales changes using Corporate Reputation

	Dependent variable:			
	Perc_d_Sales			
	(1)	(2)	(3)	(4)
AverageSentiment_t	1.729*		1.765*	
	(1.046)		(1.033)	
CorpRep		1.898***	1.907***	
		(0.557)	(0.556)	
BMACIndex				−0.001
				(0.002)
BTM	−0.207***	−0.199***	−0.186***	−0.268***
	(0.032)	(0.031)	(0.032)	(0.045)
Size	0.138***	0.122***	0.130***	0.238***
	(0.029)	(0.028)	(0.029)	(0.047)
Turnover	−0.017	−0.009	0.002	−0.058
	(0.024)	(0.024)	(0.024)	(0.048)
CSR_RepY	−0.008	−0.012	−0.014	−0.092*
	(0.025)	(0.025)	(0.025)	(0.056)
Constant	−1.657***	−1.507***	−1.768***	−2.690***
	(0.582)	(0.557)	(0.576)	(0.942)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	490	490	490	254
R^2	0.312	0.326	0.330	0.416
Adjusted R^2	0.212	0.228	0.231	0.276
Residual Std. Error	0.129 (df = 427)	0.128 (df = 427)	0.128 (df = 426)	0.115 (df = 204)
F Statistic	3.123*** (df = 62; 427)	3.330*** (df = 62; 427)	3.338*** (df = 63; 426)	2.966*** (df = 49; 204)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 8: Predicting profit margin using Corporate Reputation

	Dependent variable:			
	ProfMrg_level			
	(1)	(2)	(3)	(4)
AverageSentiment_t	1.286**		1.296**	
	(0.528)		(0.527)	
CorpRep		0.532*	0.539*	
		(0.285)	(0.283)	
BMACIndex				0.001
				(0.001)
BTM	−0.022	−0.025	−0.015	−0.079***
	(0.016)	(0.016)	(0.016)	(0.017)
Size	−0.007	−0.015	−0.010	−0.005
	(0.015)	(0.014)	(0.015)	(0.018)
Turnover	0.002	−0.0005	0.008	0.011
	(0.012)	(0.012)	(0.012)	(0.018)
CSR_RepY	0.009	0.009	0.007	0.028
	(0.013)	(0.013)	(0.013)	(0.021)
Constant	0.681**	0.841***	0.650**	0.340
	(0.294)	(0.285)	(0.294)	(0.356)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	490	490	490	254
R^2	0.941	0.941	0.942	0.977
Adjusted R^2	0.933	0.932	0.933	0.971
Residual Std. Error	0.065 (df = 427)	0.065 (df = 427)	0.065 (df = 426)	0.044 (df = 204)
F Statistic	109.964*** (df = 62; 427)	109.308*** (df = 62; 427)	108.942*** (df = 63; 426)	174.510*** (df = 49; 204)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 9: Predicting operating expenses changes using Corporate Reputation

	Dependent variable:			
	Perc_d_OpExp			
	(1)	(2)	(3)	(4)
AverageSentiment_t	−0.033		−0.029	
	(0.380)		(0.380)	
CorpRep		0.204	0.203	
		(0.204)	(0.204)	
BMACIndex				−0.001
				(0.001)
BTM	0.046***	0.048***	0.048***	0.044***
	(0.012)	(0.011)	(0.012)	(0.016)
Size	0.035***	0.034***	0.034***	0.024
	(0.010)	(0.010)	(0.011)	(0.017)
Turnover	−0.003	−0.001	−0.001	−0.019
	(0.009)	(0.009)	(0.009)	(0.017)
CSR_RepY	−0.010	−0.011	−0.011	0.004
	(0.009)	(0.009)	(0.009)	(0.020)
Constant	−0.440**	−0.456**	−0.452**	0.095
	(0.211)	(0.204)	(0.212)	(0.343)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	490	490	490	254
R^2	0.224	0.226	0.226	0.377
Adjusted R^2	0.111	0.113	0.111	0.227
Residual Std. Error	0.047 (df = 427)	0.047 (df = 427)	0.047 (df = 426)	0.042 (df = 204)
F Statistic	1.987*** (df = 62; 427)	2.008*** (df = 62; 427)	1.971*** (df = 63; 426)	2.517*** (df = 49; 204)
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 10: Predicting salaries expenses changes using Corporate Reputation

	Dependent variable:			
	Perc_d_SalExp			
	(1)	(2)	(3)	(4)
AverageSentiment_t	0.468		0.449	
	(1.250)		(1.248)	
CorpRep		−1.018	−1.015	
		(0.671)	(0.671)	
BMACIndex				0.001
				(0.002)
BTM	−0.041	−0.056	−0.053	−0.015
	(0.038)	(0.038)	(0.039)	(0.053)
Size	0.009	0.012	0.014	−0.076
	(0.034)	(0.034)	(0.035)	(0.056)
Turnover	0.015	0.002	0.004	−0.050
	(0.029)	(0.028)	(0.029)	(0.057)
CSR_RepY	−0.015	−0.011	−0.012	−0.075
	(0.030)	(0.030)	(0.030)	(0.067)
Constant	−0.204	−0.079	−0.146	2.083*
	(0.696)	(0.670)	(0.696)	(1.127)
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	490	490	490	254
R^2	0.088	0.092	0.092	0.160
Adjusted R^2	-0.045	-0.040	-0.042	-0.042
Residual Std. Error	0.154 (df = 427)	0.154 (df = 427)	0.154 (df = 426)	0.138 (df = 204)
F Statistic	0.661 (df = 62; 427)	0.700 (df = 62; 427)	0.689 (df = 63; 426)	0.792 (df = 49; 204)
Note:				*p<0.1; **p<0.05; ***p<0.01