DO WORDS IN U.S. 10-K FILINGS REFLECT DIVERSITY AND INCLUSION EFFORTS?

[1]BENJAMIN P FOSTER, [2]ANDREW MANIKAS

[1,2]University of Louisville, Louisville, KY, USA
E-mail: [1]ben.foster@louisville.edu, [2]andrew.manikas@louisville.edu

Abstract - Studies have examined the impact of diversity on firm operations and performance. Diversity has become a value encouraged by society and a major strategy and goal for many companies. This study examines the number of unique diversity words mentioned in Management's Discussion and Analysis, Item 7 of 10-Ks filed with the Securities and Exchange Commission of the U.S. We examine if the unique number of diversity related words mentioned in the 10-Ks can provide a measure of a company's commitment to diversity by comparing the diversity word count to measures of diversity provided by independent outside organizations. The unique diversity word counts from Item 7 are significantly correlated with diversity measures/ratings constructed by outside entities.

Keywords - 10-K filings, Corporate Equality Index, Diversity and Inclusion.

I. INTRODUCTION

Studies have examined the impact of diversity on firm operations and performance. Diversity has become a value encouraged by society and a major strategy and goal for many companies. Prior research has used theoretical constructs to develop keywords for computer-aided text analysis (CATA). Some notable examples are the moral foundation [1], entrepreneurial orientation [2], and risk [3].

This study constructs a diversity dictionary and uses CATA to examine diversity words mentioned in Management's Discussion and Analysis (MD&A), Item 7 of 10-Ks filed with the Securities and Exchange Commission of the U.S. We examine if the number of unique diversity and diversity related words mentioned in 10-Ks can provide a measure of a company's commitment to diversity by comparing the diversity word count to measures of diversity provided by independent outside organizations. The unique diversity word count from the MD&As are significantly correlated with diversity measures/ratings constructed by outside entities.

II. RESEARCH METHODOLOGY

A. Words That May Indicate Diversity and Inclusion

We first develop a dictionary of diversity and inclusion words for CATA. We looked for lists developed by government and higher education institutions because they seem to be at the forefront of diversity efforts. We utilized a synthesis of words found from the following four primary sources.

1. The Diversity & Inclusion Dictionary [4]
2. "Signals on Corporate Websites" [5]
3. Great Britain Equality Act [6]
4. Diversity, Equity and Inclusion Terms and Definitions [7]

Other sources contained overlapping terms and thus did not increase the count of words representing diversity and inclusion beyond these sources. Eliminating redundant words and those with alternate non-diversity meanings produced a final list of 88 words/phrases. (A partial list of these words is shown in the Appendix. A full list is available from the authors).

We analyze the freeform text retrieved from the SEC's Edgar site (https://www.sec.gov/edgar/) from the annual 10-K report, Item 7 - Management's Discussion and Analysis (MD&A) of Financial Condition and Results of Operations for diversity and inclusion words. This section of the 10-K gives the company's perspective on the business results of the past financial year and allows company management to tell its story in its own words. Prior research has used CATA and analyzed the free form text in the MD&A with other construct dictionaries [8] [9].

B. Independent measures of company's diversity and inclusion efforts

After identifying words for our Diversity and Inclusion dictionary, we seek evidence that using the dictionary to analyze organizations' public communications can provide an indication of the diversity efforts of those organizations. Some publicly available independent evaluations of organizations' diversity and inclusion efforts exist. We use two measures of notable efforts in firm diversity: 1) the DiversityInc Top 50, and 2) the Corporate Equality Index (CEI).

We will first test if mentioning more of these words in Item 7 of a 10K corresponds with a company being listed on *DiversityInc's* Top 50 organizations for diversity. The *DiversityInc* Top 50 is a highly sought-after honor with applications increasing annually. According to the publication's website, more than 1,800 companies submitted applications in 2019 and a mere 50 were chosen. Participation is free and it is made clear that this list is not a "pay-to-play" system. DiversityInc examines diversity on several verifiable, objective measures submitted by the competing firms. Criteria for inclusion on

DiversityInc's lists are based on a broad definition of diversity that includes the commitment of upper management to diversity initiatives, development of a diverse talent pipeline, and the diversity of suppliers
According to the DiversityInc website, winners are derived solely from information contained on the corporate survey submissions [10]. Further, companies must have at least 1,000 employees in the U.S to be considered for the list. Additionally, as industries may differ in terms of the amount and type of diversity, companies are evaluated within the context of their own industries. Prior research has found that inclusion on the *DiversityInc's* Top 50 list is associated with higher financial performance by firms [11].
To ensure results are not specific to the DiversityInc. lists, we also investigate the ability of our proposed dictionary to predict the rating received by firms in the Human Rights Campaign Foundation's Corporate Equality Index (CEI). This index also uses objective measures of policies and processes of firms. The CEI provides a national benchmarking tool to analyze corporate policies and practices related to gay, bisexual, lesbian, transgender and queer employees [12]. Including ratings of how firms value LGBTQ employees in our analysis provides another comprehensive measure of diversity, rather than simply focusing on race/ethnicity and gender diversity. An interesting feature of the CEI is that it not only considers how firms treat their LGBTQ employees but also their LGBTQ customers and investors. Prior research has found that higher CEI ratings are associated with higher innovation and financial performance by firms [13] [14].

C. Data

We utilized the Compustat database to identify firms publicly traded on US stock markets. Firms were matched by CIK to their 10-K reports. To be included in our final dataset, the data had to be from 2010 to 2018,and have a machine-readable Item 7 (MD&A) in the 10-K. We chose the 2010 to 2018 timeframe because we wanted relatively recent company freeform text, and relatively normal economic conditions (not including data from the 2008-2009 financial crisis). Furthermore, the CEI ranking and other diversity measures were merged into the dataset as other variables. We confined the sample to companies for which both CEI ratings and CATA readable free form text in the 10-K MD&A. At the commencement of this study, these measures provided 2733 firm-year observations covering 2010 to 2018.

III. RESULTS

Table 1 provides the simple statistics for our variables of interest and their Pearson's correlations. The MD&As examined from 10-Ks contained from 0 to 9 different diversity words from our dictionary list, and an average of less than three diversity words. The CEI for the companies varies from 0 to 100, where 100 is the maximum score possible for a CEI. The average CEI is slightly over 71. DivList is a (0, 1) categorical variable. Because only 50 companies can be on the list in any given year, the mean is 0.10. The correlations indicate that companies' diversity words used do indicate their commitment to diversity and inclusion as measured by independent organizations. DIVCTS is correlated with CEI at a p-value $\leq$0.05 while DIVCTS is correlated with DivList at a p-value <0.0001.

IV. CONCLUSIONS

The *DiversityInc*Top 50 and CEI attempt to get at actual diversity within the firm. For firms that are not rated on diversity lists or have a CEI rating, perhaps their public words can be examined with our dictionary as a proxy for diversity and inclusion efforts. We have shown here that our new dictionary correlates with both being listed on the *DiversityInc* Top 50, ranking within the *DiversityInc* Top 50, and the CEI rating. DiversityInc looks as gender and racial makeup while CEI focuses more on LGBTQ. However, other aspects of diversity such as religious belief, socioeconomic background, etc. would provide areas for future research. Such research could focus on how to measure other areas of diversity, collecting data, and determining which firms focus on multiple dimensions of diversity and inclusion.

Panel A: Descriptive statistics

Variable	N	Mean	Std Dev	Minimum	Maximum
DIVCTS	2733	2.69	1.52	0.00	9.00
CEI	2733	71.33	34.36	0.00	100.00
DivList	2733	0.10	0.30	0.00	1.00

Panel B: Correlations

	DIVCTS	CEI	DivList
DIVCTS		0.049	**0.116**

		0.011	**<.001**
CEI	0.049		**0.230**
	0.011		**<.001**
DivList	**0.116**	**0.230**	
	<.001	**<.001**	

DIVCTS = number of unique diversity words included in 10-K MD&A;
CEI = HRCF CEI related to that year of operation (HRC CEI reports are issued late in one year with the title being the report for the following year: the 2019 Report is issued in late 2018. Thus, we relate the rating in the 2019 Report to 2018 financial results);
DivList = 0, if company did not appear on DiversityInc Top 50 Companies for Diversity list from 2011 to 2018; 1, if company included in DiversityInc lists.

Table 1: Descriptive Statistics and Correlations

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APPENDIX: DIVERSITY DICTIONARY

ACCESSIB*	INCLUSION*
ACCOMMODAT*	INCLUSIVE
ADA	INDIGENEITY
AFFIRMATIVE_ACTION	INTERSECTIONALITY
AGENDER	INTERGENDER
ALIEN	INTERSEX
ALLY	LESBIAN
ANDROGYNY	LGBT*
ASEXUAL	MARRIAGE
BIAS	MATERNITY
BICULTURAL	METROSEXUAL
BICURIOUS	MINORITY
BIGOTRY	MUTLICULTURAL
BIOPHOIBA	NATIVISM
CLOSET*	PRIVILEGE*
CULTUR*	QUEER
DEAF	QUESTIONING
DISABIL*	RACE
DISCRIMIN*	RACISM
DIVERSITY	REASONABLE_ ACCOMODATION*
DOMESTIC_PARTNER	REFUGEE*
EMMIGRAT*	RELIGION
EMPOWER*	REPARATION*
EQUITY	SAFE_SPACE*
ETHNIC*	SEX*
ETHNO*	SIZEISM
GAY	SOCIAL_JUSTICE
GENDER*	STEREOTYPE

★★★