

# Lexical Bundle Variation in Business Actors’ Public Communications

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**Abstract.** Business Actors communicate to audiences via the mass media through public statements or informal interviews with journalists. This information is directly quoted in news stories about financially significant events. The motivation for speaking to the mass media varies from job role to job role, and therefore the vocabulary of a job role and the delivery of the information to the press varies also. This paper provides a comprehensive analysis using lexical bundles and sentimental lexical bundles to discover the common vocabulary of four selected job roles: Analyst, CEO, CFO and Economist, and their similarity with other job roles. This work demonstrates that the CEO job role makes ample use of highly positive repetitive lexical bundles, whereas the Economist holds a unique role where it has a vocabulary with less of a positive skew and few shared lexical bundles with other job roles.

**Keywords:** Lexical Bundles · Corpus Linguistics · Business Actors

## 1 Introduction

Public business communication does influence the prospects of an organisation [6]. Business Actors who make unguarded or unvarnished statements can prejudice the organisation’s share price and in some extreme cases bankrupt the company. The most famous example of this phenomenon is the case of Gerald Ratner, who stated: “People say to me, ‘how can you sell this for such a low price?’ And I say because it’s total crap” [11]. His company, Ratners the Jewellers, promptly lost eighty per cent of its value and renamed itself Signet [11]. The reputational damage caused by “straight talking” has led to Business Actors developing their own method of communication with unique idioms and risk-averse language [4]. Finance Professionals, such as Economists and Analysts are not bound by such concerns, and can make objective and factual statements about a company, but do not have access to private information, and therefore may have to couch their statements with expressions of uncertainty.

Lexical bundles are a method of determining the vocabulary and the idioms of speakers [12]. This article uses the 500,000 public statements by Business Actors and Finance Professionals from the 2007 Financial Crisis to determine

the common language of each group, as well as the differences and similarities between each group. The article will adhere to the following structure: Literature Review, Lexical Bundle Methodology, Lexical Bundle Experiments, Sentiment Lexical Bundle Experiments, and Conclusion.

## 2 Literature Review

The literature review covers relevant business speech corpora and lexical bundles. The corpora research search limited itself to identifying corpora that contained day-to-day public communication by Business Actors, whereas the lexical bundle research was limited to the examination of diverse domains using lexical bundles.

The main corpus discovered in the literature review is the Minho Quotation Resource [2], which is a resource of 500,000 public statements from Business Actors during the Financial Crisis of 2007 to 2011. The statements contain the speaker's name, where possible a job title and the quote. The resource was updated in 2021 [5]. The update cleaned up the quotes to make sure that they had the same encoding and inferred missing job titles.

Lexical bundles are a technique that can be used to discover patterns within corpora. They are a sequence of words or Part of Speech Tags (POS) from the same sentence[10]. The most common sequences will represent the everyday language of the corpora. Lexical bundles can be of any length, however, the research literature suggests that a length of four words (tetragrams) is optimal [10]. The lexical bundle approach to determine common vocabularies has been applied to several domains including Wikipedia [7], spam emails [9], and historical English [13]. The literature review failed to discover the application of lexical bundles to the business speech domain.

## 3 Lexical Bundle Methodology

This paper seeks to explore the hypothesis that the employment status affects the vocabulary and style of public utterances of Business Actors. This paper asserts that Business Actors employed by an organisation will moderate their language, and use a style of delivery that will use risk-averse language to downplay uncertainty and exaggerated language to amplify success or rise a banal event to a positive achievement. Independent Business Actors will not have limitations imposed on their language, however, they will not have access to private information which is available to their employed counterparts and consequently will not communicate an accurate picture of the current financial situation.

### 3.1 Lexical Bundles

The experimental methodology collects tetragrams with a minimum of twenty occurrences per million words, as this is a common cut-off point in the research literature [1].

The speech of four job roles was chosen for comparison. They are Analyst, Chief Executive Officer (CEO), Chief Financial Officer (CFO) and Economist. These roles were chosen because they represent different roles in the business domain. The Analyst and Economist are typically independent of constraints of causing reputational damage as they are commenting on third-party organisations, whereas the CEO and CFO are subject to constraints as their utterances can affect share price and sales. The lexical bundle analysis will 1. analyse the most frequent lexical bundles and 2. compute the lexical bundle similarity between the job roles. Job roles with similar lexical bundle similarity will have a common motivation for public communication.

The common use of sentiment in the vocabulary of a speaker can be an indication of a manipulative role, where the speaker seeks to convince an audience to accept their point of view through the use of emotion [4]. The use of sentiment to manipulate opinion is known as framing [4]. The sentiment lexical bundle analysis will follow the lexical bundle analysis, but will exclude any lexical bundle that does not have a sentiment word.

## 4 Lexical Bundle Experiments

The lexical bundle analysis extracted tetragrams that had a relative frequency of twenty or above. The results for the four selected speakers are shown in Table 1, and because of space limits the most frequent ten lexical bundles for each speaker are displayed. The raw results data can be found here. Lexical bundles that are common to all speakers are in bold.

The lexical bundles for the Analyst job role clearly show that their vocabulary is dominated by forward-looking lexical bundles that imply a short-term prediction about a financial instrument. The forward-looking lexical bundles include “is going to be” and “in the short term”. This is not unexpected, as the prediction or estimation of financial results is part of an analyst’s job role.

The CEO lexical bundles show the language of manipulation, as there is frequent use of positive sentiment to frame a subject. The common sentiment terms are “pleased” and “excited”, and the lexical bundles also reveal that a common sentiment phrase “look forward to” is frequently used.

The CFO lexical bundles are similar to both that of the Analyst and CEO role, as the lexical bundles have both the sentimental lexical bundles such as “we are pleased to” as well as the reporting type lexical bundles such as “in the first quarter” and “in the second half”. These reporting and manipulation lexical bundles are expected as the CFO is employed directly by a company, but also has a reporting function where the CFO is legally mandated to provide a truthful account of the origination’s financial position.

The Economist lexical bundles, except for the named entity, Bank of England, seem to be reporting bundles such as “in the fourth quarter” and “in the first quarter”, which again is in line with the demands of the job role.

The most frequent lexical bundles as shown in Table 2 does not seem to have common bundles across each of the job roles. There is one, “the end of the”,

| Analyst               |            | CEO                     |            | CFO                   |            | Economist              |            |
|-----------------------|------------|-------------------------|------------|-----------------------|------------|------------------------|------------|
| L.B                   | Rel. Freq. | L.B                     | Rel. Freq. | L.B                   | Rel. Freq. | L.B                    | Rel. Freq. |
| is going to be        | 228        | we look forward to      | 433        | in the first quarter  | 523        | the bank of england    | 511        |
| <b>the end of the</b> | 185        | we are pleased to       | 365        | in the fourth quarter | 481        | in the third quarter   | 468        |
| in the short term     | 174        | we are very pleased     | 272        | <b>the end of the</b> | 396        | the second half of     | 373        |
| in the second half    | 149        | <b>the end of the</b>   | 178        | at the end of         | 382        | in the fourth quarter  | 347        |
| is likely to be       | 145        | are very pleased to     | 163        | in the third quarter  | 382        | <b>the end of the</b>  | 338        |
| at the end of         | 141        | we are excited to       | 160        | in the second quarter | 311        | in the second half     | 303        |
| in the united states  | 127        | as we continue to       | 152        | by the end of         | 283        | over the coming months | 286        |
| going to be a         | 127        | look forward to working | 149        | we are pleased to     | 283        | in the first quarter   | 277        |
| the second half of    | 123        | and look forward to     | 145        | we look forward to    | 269        | at the end of          | 251        |
| per cent of the       | 120        | we will continue to     | 140        | in the second half    | 255        | in the second quarter  | 243        |

**Table 1.** The Most Frequent Lexical Bundles per Speaker Role, where L.B = Lexical Bundle and Rel. Freq. = Frequency Per Million Bundles

which is common to all job roles. However, the use of a lexical bundle may vary between job roles. A sample of the use of the lexical bundles is shown below.

- Analyst: Last Christmas was **the end of the** world, so we’re seeing some quite good numbers
- CEO: he had not abdicated from his pledge to make an announcement on the post before **the end of the** year
- CFO: While Credit Suisse’s Tier 1 ratio was 14.1 per cent at **the end of the** first quarter
- Economist: There are some who are **at the end of** their operating capital.

As demonstrated by the examples is that the lexical bundle **at the end of** can refer to different types of speech, such as time periods or idioms such as “the end of the world”.

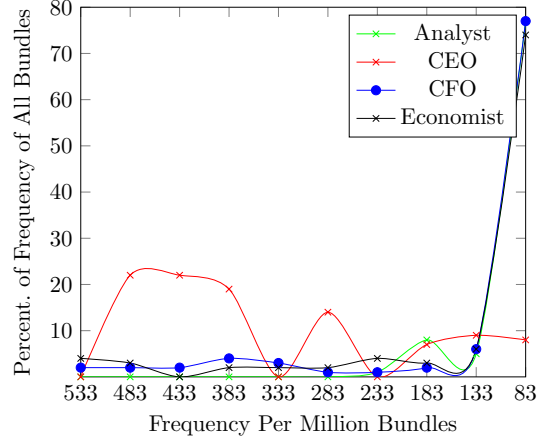
The relative frequency and variety of lexical bundles can indicate a type of vocabulary. A restricted number of lexical bundles with high relative frequency will indicate a repeated and frequently used vocabulary, whereas numerous lexical bundles with low relative frequency may indicate a richer vocabulary. A comparison was made where the lexical bundles were aggregated by their relative frequency, and the results are shown in Figure 1, and it is clear from the

results that the CEO job role has the most restricted vocabulary of all the job types as the most frequent lexical bundles represent a large amount of the total frequency of all lexical bundles when compared to other job roles.

The remaining speakers have similar profiles where the low-frequency bundles in combination make up the majority of the linguistic profile of each of the Analyst, CFO and Economist job roles. This suggests that these job roles have a richer vocabulary than the CEO, with less repetition. The research by [4] would suggest that this repetition would be used in framing and manipulative statements, and that the remaining job roles would indulge in this activity less often than the CEO job role.

The speakers from each job role will share lexical bundles, as they will have common functions when communicating with the mass media. It is possible to compute the similarity of lexical bundle profiles with a weighted lexical bundle similarity, which can be represented as  $weighted\_sim = \frac{sum\_of\_common\_bundles\_rel\_frequency}{sum\_of\_all\_bundles}$ . The similarity results are in Table 2, and it is clear from the results that the two most similar job roles are the CEO and Analyst with a 0.40 weighted lexical bundle similarity score, and the most dissimilar job roles are the CFO and the Economist.

The shared vocabulary between Analysts and CEOs are forward-looking statements that include lexical bundles such as: “is expected to be”, “in the coming years”, “end of this year”, “be one of the”, “market share in the”, and “in the next few”. It is likely that because the CEO is obliged to manipulate various audiences, they will speculate positively about the prospects of the organisation, whereas the Analyst will also speculate, but objectively. It should be noted that the shared vocabulary between the CEO and the Analyst is objective lexical



**Fig. 1.** A Comparison of The Distribution of Frequency of Use of Lexical Bundles with a minimum relative frequency of twenty

| Job Role  | Analyst     | CEO         | CFO  | Economist |
|-----------|-------------|-------------|------|-----------|
| Analyst   | N/A         | <b>0.40</b> | 0.14 | 0.26      |
| CEO       | <b>0.40</b> | N/A         | 0.22 | 0.18      |
| CFO       | 0.14        | <b>0.22</b> | N/A  | 0.12      |
| Economist | <b>0.26</b> | 0.18        | 0.12 | N/A       |

**Table 2.** Weighted Lexical Bundle Similarity by Job Role

bundles, whereas the most common CEO lexical bundles have sentiment words such as “pleased” and “excited”.

The average similarity of each job role to other job roles, can indicate the breadth of the job role when communicating through the mass media. Low average similarity indicates a unique communication function, whereas a high average similarity indicates a shared communication function with other job roles. The average similarity for each job role is: Analyst  $0.26(\pm 0.11)$ , CEO  $0.26(\pm 0.09)$ , CFO  $0.16(\pm 0.04)$  and Economist  $0.19(\pm 0.06)$ . The Analyst and the CEO roles have the highest average similarity, but they are within one standard deviation of the lowest score. The Analyst and the CEO roles have the highest similarity score because of their mutual similarity. However, the similarity scores for the CFO and the Economist are relatively low due to their unique vocabulary and role when communicating with the mass media.

The Minho Quotation Resource contains additional job roles to the four that have been used thus far. This experiment used job roles that have more than two hundred quotes in the aforementioned resource. The similarity experiment was repeated with these new job roles. The results are in Table 3.

| Job Roles | Similarity          |                    |                              |                                |
|-----------|---------------------|--------------------|------------------------------|--------------------------------|
|           | Role                | Role               | Role                         | Role                           |
| Analyst   | Head<br>(0.54)      | Director<br>(0.42) | CEO<br>(0.40)                | Managing<br>Director<br>(0.31) |
| CEO       | President<br>(0.78) | Chairman<br>(0.74) | Director<br>(0.6)            | Vice Pres-<br>ident<br>(0.52)  |
| CFO       | CEO<br>(0.22)       | Chairman<br>(0.19) | President<br>(0.18)          | Head<br>(0.15)                 |
| Economist | Head<br>(0.26)      | Analyst<br>(0.26)  | Chief<br>Economist<br>(0.20) | CEO<br>(0.18)                  |

**Table 3.** Most Similar Job Roles by Weighted Lexical Bundle

In common with the previous experiments, the CFO and the Economist job roles have the least lexical bundle similarity with the other job roles, and therefore it is possible to assume that their lexical bundles are unique to their job role when communicating with the mass media. The Analyst and the CEO job roles have a shared lexical bundle across some job roles, which infers that they share similar communication functions with other job roles. For example, the CEO and President job roles share numerous highly frequent lexical bundles, such as “i am pleased to”, “and we are confident” as well as reporting lexical bundles such as “in the second quarter”, although the common lexical bundles did not reveal any lexical bundles that speculated about the financial future of the or-

ganisation. The Analyst and the Head roles in common share forward-looking lexical bundles, such as “is likely to be” and “the next six months”.

The lexical bundle analysis reveals some characteristics of the vocabulary of the public utterances of each of the selected job roles. The Analyst role is preoccupied with forward-looking lexical bundles whereas the CEO, despite having the most restricted vocabulary, has the broadest role when communicating with the mass media. They have forward-looking, reporting and framing lexical bundles. The Economist and CFO job roles have very few frequent lexical bundles in common with other job roles. This paper claims that these job roles' communication with the mass media is very limited or specialised.

## 5 Sentiment Lexical Bundle Experiments

The previous section mentioned sentiment lexical bundles as lexical bundles that have sentimental words. Job roles that have a sentimental lexicon could be using sentiment to manipulate the audience that the quote was directed to [8]. The first experiment was to compute the percentage of the lexical bundles that have a sentiment orientation. Two measures were used: a simple percentage computation,  $\frac{\text{number\_sentimental\_lexical\_bundles}}{\text{total\_number\_lexical\_bundles}}$ , and a weighted percentage computation, which is computed by  $\frac{\text{frequency\_sentimental\_lexical\_bundles}}{\text{frequency\_all\_lexical\_bundles}}$ . These measures determine the percentage of the common vocabulary of a job role that uses sentiment. High use of sentiment is an indicator of manipulation [4].

It is clear from results in Table 4 that the CEO job role relies more upon sentimental lexical bundles than the other job roles. The use of sentimental language is probably by design to portray their organisation and its achievements in a positive light. The most frequent lexical bundles are shown in Table 6, and it is clear from the results is that the relative frequency of the lexical bundles for the CEO and CFO roles is far higher than for the Analyst and Economist roles and that the CEO and CFO lexical bundles have a framing role. The bundles such as “we are pleased to” and “we are excited to” frame the event or action which is next in the sequence. For example, “We are excited to see a genuine transformation for insurance buyers, brokers and insurers”<sup>3</sup>, which is a framing quote as it carries a high sentiment score, but little or no actionable information.

The sentiment bundles for the Analyst and Economist job roles are not framing an event or action to promote their organisation, but are bundles that provide

| Job Role  | Percent. Senti-<br>ment | Weighted Per-<br>cent. Sentiment |
|-----------|-------------------------|----------------------------------|
| Analyst   | 0.09                    | 0.07                             |
| CEO       | 0.26                    | 0.30                             |
| CFO       | 0.12                    | 0.13                             |
| Economist | 0.09                    | 0.07                             |

**Table 4.** The Percentage of Sentimental Lexical Bundles

<sup>3</sup> <https://archive.fo/aGN0g>

an opinion or description about a third party. For example, “in the right direction” and “recovery will be slow”, are non-manipulative lexical bundles as they are objective statements.

The type of sentiment that is used is an indicator of the function of the language in the mass media. An overly positive lexicon could be an indicator of a manipulative imperative when communicating with the public at large. The distribution of bundles across the sentiment categories could be found in Table 5, where the per cent measure is a simple intersection of lexical bundles with each sentiment category and the weighted per cent is where the relative frequency of the bundle is included in the calculation. It is calculated by  $\frac{freq\_lb\_sent\_cat}{total\_frequency}$  where  $freq\_lb\_sent\_cat$  is the relative frequency of all lexical bundles with a given sentiment direction, and  $total\_frequency$  is the total frequency of all lexical bundles with a sentiment category.

The results demonstrate that the CEO vocabulary is dominated by positive lexical bundles. This would imply that the CEO job role may be using framing [4] to manipulate audiences. A restricted vocabulary and frequent highly positive lexical bundles, indicates that CEOs communicate no useful information when using positive sentiment[4]. The CFO job role is also highly positive with 0.86 of lexical bundles

| Job Role  | Lexical Bundles   |          |                   |          |
|-----------|-------------------|----------|-------------------|----------|
|           | Positive          |          | Negative          |          |
|           | Percent. Weighted | Percent. | Percent. Weighted | Percent. |
| Analyst   | 0.79              | 0.79     | 0.21              | 0.21     |
| CEO       | 0.99              | 0.99     | 0.01              | 0.01     |
| CFO       | 0.86              | 0.83     | 0.14              | 0.17     |
| Economist | 0.65              | 0.68     | 0.35              | 0.32     |

**Table 5.** Sentiment Profile of Lexical Bundles by Job Role

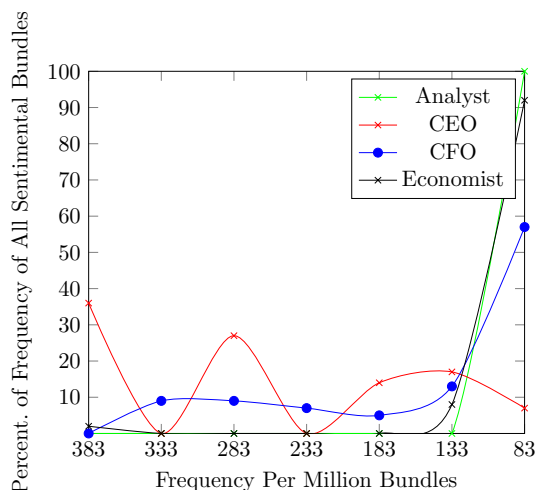
being positive, and this would imply that a job role that has a dependent employment role will have a highly positive lexicon. The Economist has the highest percentage of negative lexical bundles, and this would imply that they have a more balanced vocabulary, and this is not unexpected as the economist job role should provide balanced commentary on the economy.

In common with the lexical bundle section, an experiment was conducted to identify the distribution of sentiment lexical bundles by job role. And from the results, it is clear that the CEO and CFO have differing sentimental lexical profiles to that of the Economist and Analyst roles. The sentimental lexical bundles appear infrequently for the Analyst and Economist job roles. There are no sentimental lexical bundles that have a relative frequency higher than one thirty-three times per million lexical bundles for either job role. Conversely, the CEO job role uses very high frequently occurring sentimental lexical bundles in their vocabulary. The CFO role is almost equidistant between the profiles, as it demonstrates that the majority of its sentimental lexical bundles are low frequency, but not as many as the Analyst and Economist roles. And it has a



higher use of more frequent sentimental lexical bundles than the Analyst and Economist roles, but lower than the CEO.

The distribution of sentimental lexical bundles is similar to that of lexical bundles in Figure 1 for that of the Analyst, CEO, and Economist job roles. However, the CFO role uses sentimental lexical bundles differently from that of lexical bundles, as it has a heavier reliance on more frequent lexical bundles. It can be inferred that the CFO has a dual role, where they behave similarly to an Analyst or Economist with objective lexical bundles. However, the CFO behaves similar to a CEO when it comes to the use of sentiment lexical bundles.



**Fig. 2.** A Comparison of The Distribution of Frequency of Use of Sentimental Lexical Bundles with a minimum relative frequency of twenty

The similarity of sentimental lexical bundles between job roles is an indicator of similar use of sentiment in their communication with the mass media. And from the results in the Table 7, it is clear that the use of sentiment is determined by the type of employment, where the CFO and the CEO have the highest mutual common use of sentimental lexical bundles, whereas the Economist and Analyst job roles share a higher degree of common sentimental lexical bundles than with the CFO and CEO roles. This is different to the similarity experiments with all lexical bundles in Table 2 where the Analyst and the CEO shared the most lexical bundles. Therefore, it can be concluded that the Analyst and the CEO job roles have a common objective or neutral shared vocabulary, but a dissimilar sentimental lexicon. It can be also concluded that although similar information is being communicated to the mass media by both the Analyst and the CEO, the function of the communication is different due to the dissimilar use of sentiment. This characteristic justifies the approach taken by [3] who identified actionable quotes by CEOs when their quotes were similar to that of Economists and Analysts.

The similarity of sentimental bundles can indicate a similar motivation when communicating through the mass media. This experiment repeated the experiment on page 5, where the job roles compared were expanded to all job roles in the Minh Quotation Resource that had more than two hundred quotes.

| Analyst                |            | CEO                 |            | CFO                   |            | Economist              |            |
|------------------------|------------|---------------------|------------|-----------------------|------------|------------------------|------------|
| L.B                    | Rel. Freq. | L.B                 | Rel. Freq. | L.B                   | Rel. Freq. | L.B                    | Rel. Freq. |
| more than per cent     | 72         | we are pleased to   | 365        | we are pleased to     | 283        | the worst of the       | 121        |
| to be able to          | 58         | we are very pleased | 272        | we are very pleased   | 212        | in the right direction | 87         |
| at the top of          | 51         | are very pleased to | 163        | one of the most       | 170        | more than per cent     | 78         |
| will be able to        | 51         | we are excited to   | 160        | for the full year     | 127        | the worst is over      | 61         |
| in the right direction | 47         | we are delighted to | 139        | we were able to       | 113        | this is good news      | 52         |
| would be able to       | 43         | we are very excited | 129        | will be able to       | 113        | is good news for       | 52         |
| it will be difficult   | 40         | to be able to       | 127        | are very pleased with | 99         | that the worst is      | 52         |
| is unlikely to be      | 36         | one of the most     | 119        | very pleased with our | 99         | it is hard to          | 52         |
| not be able to         | 36         | will be able to     | 116        | would be able to      | 85         | at the very least      | 52         |
| the worst of the       | 36         | we are pleased with | 103        | we are delighted to   | 99         | it is important to     | 43         |

**Table 6.** The Most Frequent Sentimental Lexical Bundles Per Job Role, where L.B = Lexical Bundle and Rel. Freq. = Frequency Per Million

| Job Role  | Analyst     | CEO         | CFO         | Economist   |
|-----------|-------------|-------------|-------------|-------------|
| Analyst   | N/A         | 0.17        | 0.07        | <b>0.18</b> |
| CEO       | 0.17        | N/A         | <b>0.36</b> | 0.08        |
| CFO       | 0.07        | <b>0.36</b> | N/A         | 0.04        |
| Economist | <b>0.18</b> | 0.08        | 0.04        | N/A         |

**Table 7.** Weighted Sentimental Lexical Bundle Similarity by Job Role

It is clear from the results in Table 8 that the CEO and CFO roles have a higher similarity with the nearest job roles when considering only sentimental bundles. This would imply that how these job roles communicate is more similar when communicating using sentiment than when communicating factual or objective information. The average increase in similarity for the four most similar job roles was  $0.09 \pm 0.01$  for the CEO role and  $0.19 \pm 0.05$  for the CFO role. Conversely, the Economist and the Analyst roles saw a decline in similarity when considering sentimental lexical bundles, with the Analyst similarity score declining by an average of  $0.17 \pm 0.03$  and the Economist's similarity score declined by  $0.12 \pm 0.02$ . This infers that these job roles share more objective or neutral lexical bundles with other job roles than sentimental ones. It is possible to con-

| Job Roles | Similarity         |                     |                                |                               |
|-----------|--------------------|---------------------|--------------------------------|-------------------------------|
|           | Role               | Role                | Role                           | Role                          |
| Analyst   | Head<br>(0.37)     | Director<br>(0.26)  | Managing<br>Director<br>(0.19) | Economist<br>(0.18)           |
| CEO       | Chairman<br>(0.86) | President<br>(0.86) | Director<br>(0.70)             | Vice Pres-<br>ident<br>(0.63) |
| CFO       | CEO<br>(0.36)      | Chairman<br>(0.33)  | Vice Pres-<br>ident<br>(0.26)  | Director<br>(0.23)            |
| Economist | Analyst<br>(0.18)  | Head<br>(0.13)      | CEO<br>(0.08)                  | Director<br>(0.07)            |

**Table 8.** Most Similar Job Roles by Weighted Sentimental Lexical Bundle

clude that these job roles do not have a common function when communicating with the mass media, however, they do have a common subject.

The sentimental lexical bundle analysis clearly shows that sentiment is used frequently by the CEO job role, however, because the job role depends upon a limited number of high frequent lexical bundles, their sentimental vocabulary is limited. There is a sentimental vocabulary that is common between several job roles, which is demonstrated by the increase in weighted lexical bundle similarity between the CEO job role and the most similar job roles. The converse is true for the Economist and the Analyst, as there seems to be no common sentimental vocabulary. This is demonstrated by lexical bundle weighted similarity being lower for the most similar job role than for lexical bundle weighted similarity.

The common sentimental vocabulary is designed to manipulate, or at least to maintain, a positive perception of an organisation. This is demonstrated by the highly positive lexicon of the CEO and CFO job roles, despite the quotes being drawn from the Financial Crisis of the early two-thousands.

## 6 Conclusion

The analysis in this article provides a comparison of the vocabulary of four types of speakers from their public communication during the Financial Crisis of 2007. It is clear from the analysis that the CEO is a unique position that shares some common functions with other job roles, however, it does have a unique function which is to use sentiment to manipulate the various audiences that the public communication is aimed at. The CEO job role not only relies upon sentiment but also a repetitive vocabulary where highly positive sentimental lexical bundles dominate public communication. This characteristic is shared by several leadership roles such as Chairman, President and Director. The inference that can be drawn from this characteristic is that sentiment analysis will not be successful in predicting the prospects of the CEO's organisation. The other job roles are not dominated by a few lexical bundles and have a richer lexicon than

the CEO role, and the skew between positive and negative sentiment is not as pronounced as in the CEO job role.

The Economist job role in terms of lexical bundles is unique as their communication with the mass media has the least common lexical bundles with other job roles, and these lexical bundles are more likely to be negative than any other job role.

The differing lexical bundles and the varying reliance upon sentimental lexical bundles, as well as the disparate richness of vocabulary used by the selected job roles, imply that one form of analysis to infer prospects will not be sufficient for Business Actors. Models will need to be generated for each type of speaker, and differing assumptions will have to be made.

## 7 Bibliographical References

### References

1. Douglas Biber and Susan Conrad. Lexical bundles in conversation and academic prose. *Language and Computers*, 26:181–190, 1999.
2. Brett Drury and José João Almeida. The minho quotation resource. In *LREC*, pages 2280–2285, 2012.
3. Brett Drury, Gaël Dias, and Luís Torgo. A contextual classification strategy for polarity analysis of direct quotations from financial news. In *Proceedings of the International Conference Recent Advances in Natural Language Processing 2011*, pages 434–440, 2011.
4. Brett Drury and Samuel Morais-Drury. The identification of framing language in business leaders’ speech from the mass media. In *Annual International Conference on Information Management and Big Data*, pages 376–383. Springer, 2020.
5. Brett Drury and Samuel Morais-Drury. An update to the minho quotation resource. *arXiv preprint arXiv:2104.06987*, 2021.
6. Richard B Higgins and Brendan D Bannister. How corporate communication of strategy affects share price. *Long Range Planning*, 25(3):27–35, 1992.
7. Turo Hiltunen. Lexical bundles in wikipedia articles and related texts. *Applications of Pattern-driven Methods in Corpus Linguistics*, 82:189, 2018.
8. Shun-Yang Lee, Liangfei Qiu, and Andrew Whinston. Sentiment manipulation in online platforms: An analysis of movie tweets. *Production and Operations Management*, 27(3):393–416, 2018.
9. Joe McVeigh. lexical bundles and repetition in email marketing texts. In Joanna Kopaczyk and Jukka Tyrkko, editors, *Applications of Pattern-driven Methods in Corpus Linguistics*, chapter 9, pages 213–250. John Benjamins, 2018.
10. Antonio Pinna and David Brett. Constance and variability. *Applications of Pattern-driven Methods in Corpus Linguistics*, 82:107, 2018.
11. Gerald Ratner. *Gerald Ratner: The Rise and Fall... and Rise Again*. John Wiley & Sons, 2008.
12. Gerold Schneider and Gintarė Grigonytė. From lexical bundles to surprisal and language models. *Applications of Pattern-driven Methods in Corpus Linguistics*, 82:15, 2018.
13. Ondřej Tichý. Lexical obsolescence and loss in english: 1700–2000. *Applications of pattern-driven methods in Corpus Linguistics*, pages 81–103, 2018.