

The Impact of CEO Facial Expressions on Firm Performance

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Abstract. In a company's financial reporting, the chief executive officer's (CEO) facial expressions can positively or negatively affect company performance. CEO facial expressions are a form of nonverbal communication that can convey a wealth of information, including emotions such as confidence, concentration, joy, anxiety, stress, and worry. With the development of emotional intelligence and leadership research, more and more scholars have begun to focus on the relationship between leaders' facial expressions and company performance. It is of importance and significance to study the impact of CEO facial expressions on firm performance. Although some preliminary studies are exploring the relationship between leaders' facial expressions and firm performance, there are still many gaps in this area. This paper uses Face Reader and AFEA Facial Expression Automated Analysis System to propose a set of quantitative data on the relationship between the CEO's facial expression and the queried data on the company's net profit interact with each other to verify that the CEO's facial expression when he/she is speaking in the company's financial report has an important impact on the company's performance over the next period. Finally, this paper reveals the mechanism of the impact of leaders' emotional expressions on firm performance, providing practical suggestions and guidance for business management. In addition, the findings can provide new ideas and directions for future leadership research.

Keywords: CEO; facial expressions; firm performance; facial expression automated analysis system.

1. Introduction

In today's competitive business environment, firm performance is critical to its survival and growth. Firm performance is the degree of efficiency and effectiveness an organization demonstrates in reaching its goals and fulfilling its mission. It encompasses many aspects, including financial performance, market share, customer satisfaction, employee performance, and innovation. Company performance is more than just a reflection of financial numbers; it includes a comprehensive assessment of the overall health of the company. Performance evaluation helps a company identify its goals, track progress, and make necessary adjustments and improvements. It is an important tool for managers and shareholders to understand the overall health of the company and help make it more competitive. Corporate performance helps a company gain a fuller understanding of its operations and guides developing strategies, improving business processes, and increasing stakeholder satisfaction. Nowadays, in a market economy, the success of a company no longer depends only on the "hard power" of material resources but is more influenced by human factors, especially the "soft power" of the leadership of the leadership team. For example, when we talk about General Electric, we can't help but think of Welch's leadership team; similarly, when we talk about Haier Group, we have to mention Zhang Ruimin. As the leader of the company, the personal image of the chief executive officer (CEO) directly affects the image of the whole company [1].

The impact of facial expressions on people is subtle yet powerful, especially for a company's CEO. The CEO's facial expression is an important communication tool to internal employees and outside investors, and therefore, the impact on company performance cannot be ignored. To better understand the mechanism of CEO facial expressions on firm performance, in-depth research on the characteristics of CEO facial expressions, their impact on employees, and their relationship with investors is needed.

However, there is relatively little research on the relationship between CEO facial expressions and firm performance. Therefore, an in-depth study of the impact of CEO facial expressions on firm performance can not only increase the understanding of this field but also provide a more accurate reference for corporate decision-making.

Based on Face Reader and Adaptive Finite Element Analysis (AFEA) Facial Expression Automatic Analysis System, this paper proposes a set of quantitative facial expressions and the relationship between the company's data and each other, to provide some theoretical data for the study of the correlation between the two.

2. Literature Review

In today's competitive business environment, human facial expression, as an important way of non-verbal communication, has a rich emotional expression function [2]. People can accurately and subtly express their thoughts and feelings through facial expressions, and they can also recognize each other's attitudes and the inner world through facial expressions [3]. Research has shown that by observing facial expressions, people can accurately perceive the emotional state of others, and this emotional contagion makes a person's emotion affect the emotions of others [4]. People use facial expressions and vocal tones to judge the emotional and psychological states of others, such as joy, sadness, and anger [5].

Studying the impact of CEO facial expressions on firm performance can be done with the help of advanced psychological, neuroscientific, and financial methods [6]. Further exploration of CEO facial expressions in communication can provide more effective guidance and support for enhancing CEO image and investor relations.

The impact of facial expressions on people is subtle yet powerful, especially for a company's CEO [7]. This influence not only affects the working status of individual employees but also directly affects the cohesion and work efficiency of the whole team. A CEO's emotional expression largely shapes the working atmosphere and culture of the company, so it is important to conduct an in-depth study on its influence. The facial expression of the CEO within a company has an important impact on the employees' emotions, their motivation to work, and their trust in the leader [8]. For example, when CEOs smile and show optimistic and confident facial expressions during their financial debriefing speeches, employees are more likely to feel positive emotions, which in turn enhance work motivation and engagement [9]. On the contrary, if the CEO shows anxiety, nervousness, or negative emotions, employees may also be affected by negative emotions, which may even lead to work stress and emotional instability, thus affecting company performance [10].

In terms of outside the company, the CEO's facial expression also has a profound impact on investors' decision-making. Investors often observe the facial expressions of CEOs to obtain clues about the future performance and development of the company, which in turn influences their investment decisions. Facial expressions can convey emotions and attitudes, which directly affect investors' confidence and expectations of the company, so the study of CEO facial expressions is of great significance in understanding investor behavior. Deeply exploring the relationship between CEO facial expressions and investor emotions, can provide new perspectives and theoretical support for investment decisions [11]. Positive and confident facial expressions can enhance investor confidence, thus influencing their decision-making behavior and making them more inclined to invest. On the contrary, negative and nervous facial expressions may create uncertainty among investors, affect their investment decisions, and even lead to divestment behavior [12]. Therefore, the CEO's facial expression has a significant influence on investors' decision-making.

3. Research Design

3.1. Data Source

Consumer News and Business Channel (CNBC) is a U.S.-based business news television station and an international business news website, Reuters: an international news organization that provides worldwide coverage of business, financial, and economic news. In this paper, CNBC, Reuters website searched for videos of CEOs presenting in company financial presentations and used Face reader, AFEA (an automated facial expression analysis system that uses computer vision and artificial intelligence technology to analyze and interpret human facial expressions) to analyze to get variable data [13]. The data obtained from the characteristics of the expressions presented by the CEO (positive emotions: excitement, emotion, excitement, etc., negative emotions: loss, anger, anxiety, etc.) are classified in a specific way [14]. The corporate performance of the CEO's company is determined by querying the comprehensive database of HOOVERS, INC (a website that provides information querying services for corporate databases, including basic company information, financial data, industry analyses, major competitors, etc.), and searching the database of the CEO's company. (a comprehensive database that includes company basic information, financial data, industry analysis, major competitors, etc., and provides search and filtering functions) and other websites. The selection of HOOVERS, INC as the data source ensures the reliability and accuracy of the data, as it provides a wide coverage of verified high-quality data.

3.2. Main Variables

Explanatory variables: Quantitative data obtained by using the automatic facial expression analysis system (Face reader, AFEA) to analyze the expression characteristics of the CEO in the financial report (based on the video of the CEO's facial features, including the eyes, eyebrows, mouth and other parts of the dynamic changes of the CEO's facial state of all the expressions in the video analyzed in detail, and ultimately obtained the ratio of the CEO's various expressions accounted for the proportion of the value and the intensity of the emotions). Explained variable: The company's performance of the company after the financial reporting, a period produced: the company's net profit revenue (net profit = total profit - income tax expense, net profit is the final operating results of an enterprise, it is a measure of the main indicators of the operating efficiency of an enterprise).

3.3. Modelling

The CEO of the company in the process of the company's financial reporting makes a variety of facial expressions, with a facial expression automatic analysis system (face reader, AFEA) to make the analysis, resulting in quantitative data, the expression data as an explanatory variable, the performance of the company generated for some time after the speech as an explanatory variable to establish regression equations, to analyze the correlation between the variables [15].

$$P = \beta_0 + \beta_1 F_1 + \beta_2 F_2 + \dots + \beta_n F_n + \varepsilon \quad (1)$$

Where P is the company's performance (net profit or revenue) after the financial presentation; F_1, F_2, \dots, F_n is the quantitative data obtained by always AFEA analysis of the CEO's facial expression characterization; $\beta_0, \beta_2, \beta_3, \dots, \beta_n$ is the regression coefficient; ε is the error term.

There are some limitations in the current study, such as; 1. Due to individual differences and cultural differences, there are large individual differences in how different people express their feelings and facial expressions the results of the study may be affected by the CEO's traits and the cultural environment in which he or she lives, and it is difficult to generalize to all contexts. 2. Data are difficult to obtain and collecting data on CEO facial expressions may be challenging, especially in real business environments. Company leaders do not usually show their true emotions in public, and there may be privacy and ethical issues involved in obtaining such data. More in-depth and comprehensive research is needed to address these limitations in the future.

4. Conclusion

Recent findings suggest that CEOs' facial expressions may have an impact on company performance: positive, confident expressions are usually strongly associated with good company performance, while negative, anxious expressions may signal a decline in performance. In terms of the effectiveness of automated facial expression analysis systems, systems such as Face Reader and AFEA are used in this paper. These systems can objectively and accurately analyze the characteristics of CEO facial expressions and provide a reliable basis for subsequent data processing and analysis. Although the impact of CEO facial expressions on company performance is derived from the general trend, individual differences and cultural differences still exist. The personal traits of CEOs and the cultural environment they live in may have an impact on the expression of facial expressions, which needs to be taken into account in the practical application. During the implementation process, we also faced some challenges in data acquisition, especially the difficulty in collecting CEO facial expression data in a business environment. Future research can further explore how to overcome these challenges and delve into the relationship between CEO facial expressions and company performance in different industries and cultures.

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