The Impact of Gender in the Context of Performance Feedback and Business Risk

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Abstract: Performance feedback provides information about the company's achieved performance compared to the aspiration level. Undoubtedly such feedback influences the decisions that business leaders make for the future, primarily with regard to business risk. However, business risk is a very general term. Since research and development is one of the riskiest investments within a company, many studies have focused on the influence of performance feedback on this variable. Admittedly, this led to mixed results. Subsequent studies have therefore proposed moderator factors that can influence the relationship between performance above or below the aspiration level and research and development. As such, the importance of the size and age of the company and the organizational reserve in this relationship was confirmed. However, environmental factors and characteristics of the CEO have not yet been examined. This research focuses on the importance of CEO gender. More specifically, since literature shows that men are generally riskier than women, male CEOs are expected to positively influence the impact of performance below or above aspiration levels on the measure of corporate risk. As a dependent variable, however, this study does not focus on research and development, as this variable is not available in the Belgian annual accounts, but on the internal cash flow of a company, which has a positive relationship with investments in research and development. The data were obtained from public financial databases on the one hand and from a cross-sectional survey completed by 448 Flemish entrepreneurs on the other. The analyses show that there is a positive effect on the dependent variable when performance is above the aspiration level, and a negative effect when performance is below the aspiration level. However, CEO gender did not appear to have a significant influence on these relationships.

Keywords: Gender, CEO, Performance Feedback, Business Risk

1. Introduction

Performance feedback provides information about the company's achieved performance compared to the aspiration level. As such, the aspiration level is a very important reference point for evaluating a company's performance. Performance below the aspiration level can be considered negative, while performance above the aspiration level can be considered a success (Cyert & March, 1963; March & Simon, 1958).

Performance feedback helps business leaders make decisions for the future (Jordan & Audia, 2012). An important factor that performance feedback influences is business risk. It appears that companies that operate below their stated goals and are close to bankruptcy prioritize survival actions and are more reluctant to take risks (March & Shapira, 1987). On the other hand, there are several studies that indicate that companies that perform below their stated goals but are not close to bankruptcy actually focus their efforts on achieving these goals and are therefore likely to be willing to take more risks to reduce the gaps between performance and set goals (Iyer & Miller, 2008; Ref & Shapira, 2017).

One of the riskiest investments within a company is research and development (R&D). As such, R&D expenditures are influenced by a company's performance feedback (Chowdhury & Fink, 2017). The many studies on this variable are, therefore, the starting point for formulating hypotheses about the impact of performance feedback on making risky business decisions in general. Thereby it seems interesting to integrate the gender impact as a moderator variable, as this variable has never been looked at in this context before.

In the next section, our hypotheses are developed based on existing literature. After the presentation of the methodology, a discussion of the obtained results follows. We end with a section of discussion and conclusions..

2. Literature Review and Hypotheses Development

2.1 Performance Relative to the Aspiration Level and Business Risk

Research and development projects are usually characterized by a long period of time and require continuous financial support (Cuervo-Cazurra & Un, 2010). As a result, they are not immediately suitable for addressing immediate problems facing a company with deteriorating performance (Cuervo-Cazurra & Un, 2010).

The performance of a company, if it is below the set aspirations, therefore, shows a complex dynamic. Research exists that establishes a positive relationship between performance below aspiration level and research and development activities (Chen, 2008; Greve, 2003). They argue that ambitious firms engage in research and development in the wake of a temporary performance decline and ultimately achieve success in business recovery.

However, other studies argue that such cases in which companies devote themselves to research and development after a temporary decline in performance and ultimately recover successfully are rather exceptional (Gentry & Shen, 2013). If performance is disappointing, companies may lack motivation to invest in research and development. Instead, managers tend to reduce R&D expenditures as financial performance deteriorates, often driven by pressure to meet profit targets and repair balance sheets (Bushee, 1998; Gentry & Shen, 2013). This is confirmed by Rudy & Johnson (2013), who state that companies that perform below their aspiration level are more likely to take immediate actions instead of thinking about actions with an expected payoff in the long term, such as research and development.

Another possible reason why the company will reduce its research and development expenditure if performance is below the aspiration level is the concept of self-enhancement (Daehun & Shin, 2020). The company and the CEO want to keep their self-image as strong as possible and want to achieve their profit goals as quickly as possible. As a result, they may reduce their research and development expenditure if performance is below aspiration levels.

Although conflicting results exist regarding the influence of performance below aspiration level on a risky business activity such as research and development, the presence of a negative relationship is often stated (Xu et al., 2019). By analogy, the first hypothesis is:

Hypothesis 1: Performance below aspiration level has a negative impact on risky business decisions.

When performance is above aspiration levels, managers experience less pressure to address immediate problems. They are motivated to shift their focus to developing sustainable, exclusive assets (such as research and development) and ensuring the long-term viability of the company (O'Brien & David, 2014; Souder & Bromiley, 2012).

As a result, unlike lower-performing firms, market leaders have strong incentives to commit to product development and increase investment in research and development (Robinson & Chiang, 2002). As performance increases, managers grow in confidence in their market position and growth path. As a result, they develop greater motivation and are likely to be more actively involved in progressive activities to ensure further growth and expansion (Birhanu et al., 2016). Research and development is widely regarded as an essential factor for building knowledge (Cohen & Levinthal, 1990) and developing capabilities (Dutta et al., 2005). Furthermore, the positive impact of a company's research and development is best reflected in the long term, over a period of five to ten years (Franko, 1989), making it an attractive option for companies that are already excelling. From this, it can be assumed that performance above the aspiration level will have a positive impact on research and development (Robinson & Chiang, 2002).

The arguments given for the relationship with research and development expenditure are also valid for other risky expenditure. From this the second hypothesis can be formulated:

Hypothesis 2: Performance above the aspiration level has a positive impact on risky business decisions.

2.2 Influence of CEO Gender

Given the interest in the ongoing debate regarding the relationship between performance above or below aspiration level and the level of research and development, several studies have proposed moderator factors. These factors include the size of the company (Audia & Greve, 2006), the age of the company (Desai, 2008) and the organizational reserve, especially the reserve that maintains business operations in periods of economic uncertainty (Kuusela et al., 2017). However, these previous studies focus on organizational factors, but further research around other factors such as CEO characteristics is lacking (Xu et al., 2019). However, CEO characteristics are very important within this theme, as the CEO has one of the most critical functions within a company (Altarawneh et al., 2020). In what follows, CEO gender is discussed as a moderator in the relationship between performance feedback and risky business decisions.

It appears that if there is a female CEO in the company, the risk level is lower than with a male CEO. So female CEOs see a greater increase in their performance with lower levels of risk compared to men (Khan & Vieito,

2013). The reason for this can be found in the fact that women generally invest in safer and less risky assets than men (Niessen & Ruenzi, 2006).

The fact that men generally take more risks than women is also confirmed by Psychogios (2007). Women use cooperation and influence along with communication and other interpersonal skills to accomplish tasks. Characteristics of male leadership are rationality, toughness, self-interest, and dominance. Men are more aggressive in negotiating and taking risks and are more interested in self-actualization and power.

A possible explanation for the differences in risk-taking between female and male CEOs can be found in the characteristic 'overconfidence'. CEOs often have overconfidence in their own management skills, which can impact their decision-making. For example, overconfidence has been shown to have a positive impact on risk-taking in a financial context (Broihanne et al., 2014). And while both women and men show signs of overconfidence (Beyer & Bowden, 1997; Huang & Kisgen, 2013), it appears to be a characteristic of men (Invernizzi et al., 2017). This is also evident, for example, from the fact that men are more likely to start a risky business compared to women (Yardanova & Boshnakova, 2011). Research also states, for example, that women are less likely to take out loans from a bank due to lower self-confidence or less overconfidence and are less inclined to take risks (Coleman, 2000; Treichel & Scott, 2006).

So the literature seems to agree that men are generally riskier than women, and also exhibit higher levels of overconfidence. Since an organization's response to performance feedback depends heavily on how key functions within the company, such as the CEO, interpret and use information (Schumacher et al., 2020), it can be assumed that these differences in CEO risk aversion have a major impact. More specifically, we propose the following hypotheses:

Hypothesis 3: Male CEOs positively influence the negative impact of performance below aspiration level on risky business decisions.

Hypothesis 4: Male CEOs positively influence the positive impact of performance above the aspiration level on risky business decisions.

3. Methodology

3.1 Sample

To test our conceptual model, we use data from a cross-sectional survey completed by Flemish entrepreneurs in 2015. The data obtained concerns the characteristics of both the CEO and the company itself. Bel-first (being a publicly available financial database provided by Bureau van Dijk) is used to obtain additional data about the financial side of these companies. The data obtained from Bel-first covers the period from 2015 to 2018. As a result, economic crises such as the coronavirus pandemic have no influence on the research. The original dataset consists of 582 observations. After removing all cases with missing values as well as outliers, a final dataset of 448 observations was obtained.

3.2 Measurements

Dependent variable. In this study, business risk is not measured by research and development, as this data is not available in the Belgian annual accounts. However, use is made of the company's internal cash flow, which has a positive relationship with investments in research and development. A higher cash flow would result in higher research and development expenditures (Francesco & Sebasitan, 2010; Sasaki, 2016). To take the size of the company into account, the cash flows are divided by the total assets of the relevant years to obtain a relative cash flow (Xu et al., 2019).

Independent variables. The company's performance is measured by the return on assets, calculated by dividing net income by total assets (Xu et al., 2019). To measure performance above or below the aspiration level, average performance over several years is used (Umans et al., 2024). The historical aspiration level will consist of the average performance of 2015 and 2016. The performance itself will consist of the average of 2017 and 2018. In this way, the performance and the aspiration level can be compared with each other, whereby if the performance minus the aspiration level is negative, the performance is below the aspiration level. In this case, the variable 'Performance below the aspiration level' will take on absolute values. Observations with performance above the aspiration level are given the value '0' (Umans et al., 2024). If performance minus the aspiration level is positive, performance will be above the aspiration level. In this case too, the variable 'Performance above the aspiration

level' will take on absolute values. Observations with performance below the aspiration level are given the value '0'.

Moderator variable. The gender of the CEO is measured as a dichotomous variable being '0' when the family firm is led by a male CEO and '1' when the family firm is led by a female CEO (Peni, 2012).

Control variables. The analyses further include three control variables. From the literature, the size of the company (expressed as the natural logarithm of the number of employees) (Audia & Greve, 2006) and the age of the company (expressed in years) (Desai, 2008) can be identified as relevant control variables. The board of directors is the third control variable. Previous research shows that a board of directors has its own characteristics and preferences and will try to convey these to the managers. For example, the size of the board of directors might negatively influence changes in the company when performance is below the aspiration level (Desai, 2016). One continuous variable will be created for the measurement, which will take the value '0' if there is no board of directors present. If there is a board of directors, this variable takes the value of the number of members (Desai, 2016).

4. Results

4.1 Descriptive Statistics

The descriptive statistics indicate that the relative cash flow has an average of 0.092. The minimum and maximum show that there are both positive and negative cash flow companies. Also, there are 211 observations whose performance is above the aspiration level and 237 observations whose performance is below the aspiration level. Furthermore, there are clearly more male CEOs than female CEOs. In fact, only 14% of companies appear to be led by a female CEO. The average age of the companies is approximately 41 years (ranging from 13 to 90 years), and the average number of employees is 34 (ranging from 0 to 850). The average number of members on the board of directors is approximately 2 (with a maximum of 12). In 172 companies, there is no board of directors.

Table I presents the pairwise correlations. It shows a positive correlation between the relative cash flow and performance above the aspiration level, and a negative correlation between the relative cash flow and performance below the aspiration level. Based on the correlation values in Table I and the computed variance inflation factors, which are lower than the threshold of four (Miles and Shevlin, 2001), multicollinearity is not a problem in this study.

Table 1: Correlation table

		1	2	3	4	5	6
1	Relative cashflow	1					
2	Performance above the aspiration level	,399**	1				
3	Performance below the aspiration level	-,428**	-,213**	1			
4	CEO gender	,035	,079	,005	1		
5	Firm age	-,071	-,108*	-,039	-,044	1	
6	Board of directors	-,053	-,136**	-,031	-,104*	,130**	1
7	Firm size	,044	-,068	-,050	-,052	,162**	,320**

N = 448

*p< 0,1 **p< 0,05 ***p< 0,01

4.2 Regression Results

To test hypotheses 1 and 2, an ordinary least squares regression was performed. From model 1, it can be concluded that performance below the aspiration level has a negative statistically significant effect (β=-0.431, p<.01) on relative cash flow. From this it can be concluded that the lower a company's performance is below the aspiration level, the lower their relative cash flow will be. Model 2 shows that performance above the aspiration level does have a positive statistically significant effect (β=0.398, p<.01) on the dependent variable. It can,

therefore, be concluded that the higher a company's performance is above historical aspiration levels, the higher their relative cash flow will be.

Table 2: Regression results for hypotheses 1 and 2

	Model 1	**Model 2**
	Dependent variable = Relative cashflow	
Performance above the aspiration level		,398***
Performance below the aspiration level	-,431***	
Firm age	-,089**	-,039
Board of directors	-,074*	-,020
Firm size	,060	,084*
	R^2 = ,197	R^2 = ,166
	F = 27,170***	F = 22,054***

N = 448

*p< 0,1 **p< 0,05 ***p< 0,01

To test hypotheses 3 and 4, this study uses the PROCESS macro in SPSS (Hayes, 2013). The obtained moderator effects with performance below and above the aspiration level as independent variables are shown in Table III. From this it can be concluded that the gender of the CEO does not have a significant influence in any case.

Table 3: Regression results for hypotheses 3 and 4

	Model 3	**Model 4**
	Dependent variable = Relative cashflow	
Performance above the aspiration level		,739***
Performance below the aspiration level	-,686***	
CEO gender	,002	,001
Interaction term CEO gender	,244	,048
Firm age	-,001**	,002
Board of directors	-,003	-,001
Firm size	,000	,005*
	R^2 = ,194	R^2 = ,168
	F = 18,291***	F = 15,260***

N = 448

*p< 0,1 **p< 0,05 ***p< 0,01

In the above analyses, a company's performance is evaluated based on its own historical performance, also called historical aspiration (Baum & Dahlin, 2007). The historical aspiration level is an internal benchmark, and internal stakeholders in particular ask questions if the company is performing worse than before. However, performance can also be evaluated against a company's social aspiration, which is its performance relative to its competitors. Social aspiration levels are used more as a measure of the company's reputation. As an additional test, we investigated whether differences or similarities can be noted when using the social aspiration levels. Therefore, the above analyses were rerun with this alternative measure (where the aspiration level consists of the average ROA of the company's sector for the same period as the performance itself) (Xu et al., 2019). The conclusions are the same.

5. Discussion and Conclusions

This study first examined the relationship between a company's performance above or below the aspiration level and making risky business decisions. Our hypotheses were formulated based on previous research with a focus on research and development. Regarding performance below the aspiration level, mixed results do exist in prior

research. On the one hand, there appears to be a positive relationship between performance below the aspiration level and research and development activities (Chen, 2008; Greve, 2003). Other studies indicate that if performance is disappointing, some companies may lack motivation to invest in research and development. As a result, companies tend to reduce R&D expenditures as financial performance deteriorates (Bushee, 1998; Gentry & Shen, 2013). By analogy with the latter view, which dominates, we assume that companies reduce their risky operating expenses when performance is below aspiration levels. There seems to be more consensus around performance above the aspiration level, and a positive impact is always assumed (O'Brien & David, 2014; Souder & Bromiley, 2012). Our research can statistically confirm both postulated relationships.

Given the important influence that the CEO has on the decisions made as a result of performance feedback, it was also hypothesized that both relationships would be strengthened if a male CEO was present. After all, there seems to be agreement in the literature that men are generally riskier than women, and also show a higher degree of overconfidence. Despite the assumed difference in CEO risk aversion, no statistically significant influence can be found for CEO gender.

It is true that there are a number of limitations in this study. Initially, we can point to the measure of business risk. Although we chose to use relative cash flow as an alternative to research and development based on previous studies, further research is needed to substantiate the positive relationship between both variables (Sasaki, 2016). A different measure of business risk is therefore recommended. The small share of female CEOs in our sample is also certainly a limitation and should be increased in future research.

The technology used also has limitations. After all, a database based on a survey instrument is inherently cross-sectional, and especially suitable for estimating the prevalence of multiple behaviors at a specific point in time (Hair et al., 2010). However, caution must be exercised in making causal connections based on these findings. Case study research would make it possible to determine why certain decisions were made (Yin, 2014). A second option is to conduct research using panel data to investigate whether differences occur at different times.

And although the Belgian context may be similar to other contexts in other countries, future research could investigate whether the same conclusions can also be found in other countries to further investigate the generalizability of the results. Another interesting avenue for future research is to examine the feedback mechanism that companies use (Audia & Greve, 2006).

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