

Erasmus University Rotterdam

Erasmus School of Economics

Bachelor Thesis International Bachelor Economics and Business Economics

Female CEOs for Firm Performance by Transformational Leadership Styles

Bachelor Thesis Strategy Economics

Name of Student Author: Lujza Andó

Student ID Number: 595025

Thesis Supervisor: dr. Coen van de Kraats

Second Assessor: Elisa de Weerd

Date final version: 10-07-2024

The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

Abstract

Promoting gender equality in national and organisational culture in European countries increased the number of women in top management and boards of directors in the last three decades. In parallel, academic researchers are paying increasing attention to investigating the effect of female leaders and their leadership styles on firm performance. This study examines the influence of CEO gender and leadership styles on a company's sales growth rate in the Hungarian manufacturing industry. Our findings show no difference between the impact of female and male CEOs on firm performance. Similar to the CEO gender, two aspects of leadership styles, namely problem-solving and the awareness of production targets, also do not show differences in the impact of CEOs adopting transactional or transformational leadership styles. In contrast, the timeframe of production targets can positively influence the firm's sales growth rate if the CEO prefers transformational leadership styles. Regarding the timeframe and awareness of production targets, our research reveals that appointing women who follow transformational leadership styles to CEO positions can enhance the company's sales growth rate. We identify limitations and some avenues for future research based on these findings.

1. Introduction

Since the 1990s, an expanding body of research has sought to quantify the effect of women working in top management positions on firm financial performance. Most studies have concluded that female CEOs can more positively influence the effectiveness of their followers than their male counterparts, leading to better firm performance (Gibson et al., 2017; Hoobler et al., 2018).

According to the OECD survey, the proportion of women in manager positions in Hungary was 39% in 2020. This value is above the OECD average of 34% for the same year. The share of female managers suggests that the country can utilise the potential benefits of management diversity. However, as reported by EIGE, only 11% of board members in the Hungarian companies listed on stock exchanges were female in 2023. Furthermore, the EIGE statistics declare that the ratio of women CEOs in Hungarian listed companies was one of the lowest, with 5.9% in 2023, which is lower by 17.6% than in 2017 when this ratio reached its highest degree.

Although women hold a considerable part of the managerial positions in the listed Hungarian firms, their representation among the board members and CEOs who make strategic decisions is among the lowest ratios in the EU and OECD countries.

National and organisational cultures shade the image. Hofstede et al. (2005) identified Hungary as one of the most masculine societies, where gender roles are clearly distinguished. In a masculine society, men often concentrate on material success, while women care about the quality of life. Managers are decisive and assertive in a masculine sector, such as manufacturing. In contrast, managers in feminine business areas, such as service companies, strive to lead by intuition and consensus.

The economic sector's gender characteristics influence the ratio of male and female managers in the organisations. The difference in ratio means that women are less likely to gain top managerial and CEO positions in male-dominated sectors (Nagy, 2005).

Generally, manufacturing is one of the economic sectors where women as CEOs are the least represented, and therefore, they can be identified as tokens. In token positions, female CEOs as individuals are more visible than their male peers. This visibility not only puts performance pressure on female CEOs but also makes their failures and dissimilarities from the dominant group more pronounced. On the other hand, tokenism drives women to

assimilation to achieve the acceptance of the dominant group (Havran et al., 2020; Torchia et al., 2011).

However, this situation is like a double-edged sword. From one point of view, when token women choose to assimilate into the dominant group, the organisation loses the opportunity to take advantage of female and male CEOs' different leadership styles and obtain financial benefits from their dissimilarities. From another perspective, if token women in top management positions want to retain their unique characteristics, they can face that their male counterparts watch their mistakes and criticise them, preventing them from performing to their best abilities (Havran et al., 2020; Torchia et al., 2011).

In this study, we focus on the Hungarian manufacturing industry. No Hungarian manufacturing companies listed on the Budapest Stock Exchange have a female CEO. However, although not in a large proportion, non-listed manufacturing companies appoint women in CEO positions in Hungary. One of our research aims is to investigate whether Hungarian manufacturing firms can benefit from being led by a female CEO. In the case of providing evidence of the positive effect of female CEOs on firm performance, we can increase interest in the Hungarian academic and economic areas regarding women in elite management roles.

The majority of academic publications on the impact of female CEOs on firm performance concentrate on Western countries in Europe and the US (Gibson et al., 2017). Our study contributes to expanding research to Central and Eastern Europe (CEE), where the topic is largely unexplored.

While most existing literature publishes findings about large companies listed on stock exchanges, our study focuses on non-listed companies from small to large sizes. Investigating the effect of female CEOs on firm performance in these organisations broadens the circle of studies researching non-listed companies from a CEE country.

In the first part of the present study, we review the literature and theoretical background regarding the relationship between CEO gender and firm performance, leadership styles and firm performance, and all three elements. We present our findings after describing the dataset and showing the methodology used to analyse the data. In the last paragraph, we summarise our results and implications, outlining the study's limitations and the future areas of exploration.

2. Literature review and theoretical background

The issue of gender diversity on the board of directors and in company top management is capturing increasing attention in academic research and corporate governance. Under the stakeholder theory, shareholders, institutional investors, politicians, activists, and consumers pressure organisations to appoint women as board members and CEO positions. Even if it does not result in more robust financial performance, the demand for gender diversity in top management is vital because heterogenous management can lead to more efficient decision-making, communication, and coordination (Francoeur et al., 2007).

2.1 CEO gender and firm performance

Women in leadership positions, such as board members, CEOs, or managers, can affect firm performance differently. In their meta-analysis, Hoobler et al. (2018) argue that more women on the board of directors leads to improved financial performance. Nevertheless, they cannot show a significant effect of female CEOs or women in top management on accounting or marketing performance. The possible cause for the lack of a direct correlation can be the stereotype that the success of top managers lies in masculine characteristics. However, female CEOs can positively shape the company's performance if a culture is more progressive toward women's equality. Thus, by successfully fighting against stereotypes in society and organisations, a higher level of gender egalitarianism can increase the magnitude of the influence of a female CEO on business effectiveness.

In terms of individual papers, studying S&P 1,500 firms from 1992 to 2006, Dezsó and Ross (2012) find a positive, significant relationship between Tobin's q and female representation in top management. The innovation intensity amplifies the base effect of women in top management on firm performance. Consequently, the more the company focuses on innovation strategically, the more female presence in top management improves its performance.

While the previous study's data consists of women in top management, Khan and Vieito (2013) focus on female CEOs in their research. Their statistical analysis of more than 10,000 US firms from 1992 to 2004 shows a higher increase in ROA if a female chief executive officer leads the organisation instead of a male CEO. Furthermore, the study reveals a negative correlation in risk-taking, which means that female CEOs make relatively safer decisions and investments than their male counterparts.

Because of the availability and reliability of the company data, most publications studying the relationship between the gender of the directors and the managers at the different levels of organisations and firm performance examine listed companies. Smith et al. (2005) go beyond this practice when investigating the 2500 largest listed and non-listed Danish firms. Their conclusion depends on the measure of performance. They reveal a significant positive effect between female CEOs and gross value added. However, they find no significant influence on other financial measures like net results or assets. When they include female vice directors, in addition to female CEOs, in the research sample, the insignificant correlations regarding female CEOs change to positive and significant.

Most publications about CEO gender and firm performance originate in the US and Western Europe, where the gender-cultural situation in the organisations differs from Central Eastern Europe (CEE). In CEE, the ratio of women in top management and the supervisory board has increased in the last decade. Initiatives to increase the number of women at the highest levels of the company's hierarchy often come from Western European headquarters or institutions. Since gender equality is not essential to national cultures, external pressure cannot make the male group commit to involving female executives and directors in high-level management activities (Havran et al., 2020).

Regarding CEE, examining 249 listed companies across six countries, including Hungary, Havran et al. (2020) find no significant relationship between female CEOs and firm performance, such as ROA and Tobin's q. However, they identify a significant negative effect of women's presence on the management board on firm financial performance if the number of female managers exceeds two. Nevertheless, when the authors consider the time factor of the effect of gender diversity on management boards, they uncover a positive significant influence of the presence of female top managers on the following year's performance.

Continuing the review of research in CEE economies, Vintila et al. (2014) examined data from almost 70 companies listed on the Bucharest Stock Exchange for three years. Their results depend on the regression method. When estimating fixed-effects models, they discover a positive effect of female CEOs on firm value, namely industry-adjusted Tobin's q. However, the authors do not find a significant relationship between the same variables by modelling without cross-sectional effects.

While Vintila et al. (2014) analyse data from 2007 to 2011, Mihail et al. (2021) examine data from more than 70 companies listed on the Bucharest Stock Exchange from 2016 to 2020. In

contrast to the previous research, the authors argue that female CEOs do not deliver better financial performance than their male peers.

Similarly, in the context of Romanian banks, Bunea et al. (2023) find that women in CEO positions do not significantly influence financial performance.

Regarding another country in CEE, Croatia, researchers analyse data from large companies in various sectors listed on the Zagreb Stock Exchange and commercial banks. Examining the influence of gender diversity on firm performance, based on data from 36 companies, Kramaric et al. (2016) identify that organisations with a female management board president reach higher firm financial performance measuring in Tobin's q. Furthermore, they claim that more women on management boards results in better firm performance.

Kramaric and Miletic (2017) conduct a complex investigation, including data from Croatian commercial banks that operated between 2002 and 2014. They find that a critical mass of 20-40% of women on management boards significantly improves banks' financial performance. The study's results suggest a significant positive influence of women as chairpersons on a bank's performance on the supervisory board. At the same time, they do not show this positive correlation in terms of the chairperson on the management board.

The same authors examine Croatia's largest manufacturers, listed and non-listed companies, operating from 2015 to 2019. Their outcomes do not strengthen the results of their previous studies because they find that gender diversity does not play a crucial role in developing a manufacturer's financial performance (Kramaric & Miletic, 2022).

2.2 CEO gender and leadership style

Although the increasing number of women in management and supervisory boards indicates changes toward inclusive corporate cultures, the low ratio of female CEOs, top managers, and board members shows that companies' leadership is still a man's playground. Despite this, if the climate and culture in the organisation and society support gender equalitarianism, women leaders can substantially affect firm performance.

The academic literature is rich with theories highlighting how women can bring their unique capabilities and thinking to companies. Some publications emphasise women's openness to new approaches and their abilities to harness internal resources, while others underline their impact on strategic choices and contribution to decision-making (Hoobler et al., 2018).

With the increasing number of women in CEO positions, the academic and economic sectors are showing a growing interest in understanding the relationship between the genders of top managers and their performance and effectiveness. This interest goes beyond the direct correlation between a CEO's gender and firm performance. Several studies are exploring the differences in leadership styles between women and men, and their implications for the financial performance of the company.

One of the most significant and frequently referenced leadership models encompasses three distinct leadership styles: transactional, laissez-faire, and transformational (Bass, 1990). Transactional leadership is based on transactions between managers and employees. Managers applying this leadership style track how their subordinates make and fulfil standards and rules. The employee whose acts and performance meet the directives gets recognition. By contrast, failure to comply with the standards implies penalties. Managers preferring the passive method of transactional leadership do not investigate deviations from rules. They intervene if problems arise.

Leaders employing a laissez-faire style forsake responsibilities and avoid decision-making. They usually empower subordinates to make their personal decisions about the work. Leaders provide necessary materials and equipment and answer the questions but are unwilling to give feedback about employees' performance.

Transformational leaders build awareness of the organisation's vision and goals at all the company levels. They inspire and stimulate followers by communicating their belief that employees can achieve great results by making extra effort. Furthermore, when problems occur, transformational leaders encourage followers to look for new ways to solve them (Bass, 1990).

In his paper, Bass (1999) brings a new perspective into his leadership model by identifying a connection between CEO gender and leadership styles. He highlights that female leaders often embody more transformational leadership styles than their male counterparts. When a woman assumes a top management position, she will likely inspire and motivate her followers through self-example and support teamwork and collaboration, influencing the organisational culture. In addition, he notes that although the doors are open to women in first- and middle-level management, the glass ceiling forms an obstacle for female applicants to top management positions like CEO, except in a few sectors such as publishing and retailing (Bass, 1999).

In their comprehensive review, Eagly et al. (1995) find that despite barriers, women who serve companies as leaders and managers are generally as successful as men. However, even supposing their equality in effectiveness, the sex of leaders does make a difference. Women, with their unique strengths in interpersonal abilities, such as cooperation with their followers, bring a distinct value to leadership. Men, on the other hand, excel in directing and controlling their subordinates. Like Bass (1999), the review's authors identify a connection between gender and leadership level. The middle management role places a significant emphasis on competencies like building cooperation, motivation, and development of employees, and these competencies are more prevalent among women (Eagly et al., 1995).

Eagle et al.'s (2003) meta-analysis of transformational, transactional, and laissez-faire leadership styles reinforces Bass' findings, specifically that female leaders are more transformational than male ones in their leadership style. In a female-male comparison of leadership outcomes, female leaders yield more favourable results regarding extra effort, satisfaction, and effectiveness than their male counterparts.

A study, including research from the US and European countries like Spain, Norway and Germany, supports the idea that female leaders enact slightly more transformational leadership behaviour (Bark et al., 2014). This study finds that women score higher on measures of transformational leadership, indicating a greater willingness to inspire and motivate their followers.

2.3 Leadership style and firm performance

Gipson et al. (2017) go beyond the relationship between the leader's gender and leadership style when including firm performance in the circle of the studied items. Beyond the claim that women leaders tend to be more likely to manifest elements of transformational leadership than their male peers, the researchers assume that the differences in leadership styles applied by female and male CEOs can explain firm financial performance. However, they find little evidence of a clear benefit for women or men regarding the impact of leadership methods on objective measures of firm performance.

Koene et al. (2002) examine the effect of different leadership styles on financial performance in 50 supermarket stores in a large retail company in the Netherlands. They discover that charismatic leadership, an element of transformational leadership style, influences the financial outcomes of stores. Charismatic leaders make their followers aware of

the company's mission and goals and responsible for their jobs, reducing the cost of control and enhancing the quality of the work. Doing this has a substantial effect on the stores' net results. Additionally, the store size significantly affects store performance. On the one hand, in smaller stores with relatively few employees, the charismatic leader can influence their subordinates closely by showing expertise, energy, consideration and support, leading to higher financial performance. On the other hand, the researchers experience no significant correlation between leadership style and firm performance in large stores with many workers. (Koene et al., 2002).

Geyer and Steyrer (1998) surveyed 1456 direct reports of branch managers in 20 Austrian banks. Their results support their hypothesis that transformational leadership affects bank performance over and above the impact of transactional leadership. The effects differ depending on the length of time. When subordinates need guidelines or advice, a transformational leader immediately impacts what and how the subordinates do, which relates positively to short-term performance but negatively to long-term performance. In contrast, in the case of well-trained and experienced employees who need little consideration, transformational leadership appears to be more strongly related to long-term than short-term performance.

2.4 Hypothesis development

Most reviewed studies find that companies with a female CEO often report better firm performance than firms with a male CEO. However, these studies examine listed and large companies from the US or Western European countries, while existing research rarely focuses on SMEs and CEE countries. Scrutinising listed and non-listed firms operating in the CEE region does not provide a clear relationship between CEO gender and the company's financial performance. Our study tends to contribute to filling the room in investigating the effect of CEO gender on firm performance not only in large organisations but also in SMEs in a CEE country. Thus, regarding the relationship mentioned above, we formulate our first hypothesis: *Hypothesis 1: Female CEOs positively affect firm performance.*

Research discovers that chief executive officers may perform at different levels due to their leadership styles. Furthermore, leadership styles may be related to the CEO's gender. It implies that while examining the effect of CEO gender on firm performance, besides the fact that the CEO is a man or a woman, we should consider how he or she leads the followers.

Bass's (1990) leadership model distinguishes transactional and transformational leadership styles. One aspect of this leadership concept is how the leader relates to solving problems. Further elements of the model are the time frame in which the leader sets the production targets and the company levels at which the CEO builds awareness of these targets.

Bass's (1990) leadership model distinguishes transactional and transformational leadership styles. One aspect of this leadership concept is how the leader relates to solving problems. Further aspects of the model are the timeframe in which the leader sets the production targets and the degree of awareness of the production targets at the different company levels. Most reviewed literature argues that transformational leadership styles positively affect firm performance. Using Bass's leadership approach, we develop the following hypotheses to study the relationship between firm financial performance and the aspects of leadership styles:

Hypothesis 2a: Transformational leadership styles positively affect firm performance regarding problem-solving.

Hypothesis 2b: Transformational leadership styles positively affect firm performance regarding the timeframe of production targets.

Hypothesis 2c: Transformational leadership styles positively affect firm performance regarding awareness of production targets.

Hypothesis 2d: Transformational leadership styles positively affect firm performance regarding the joint effect of problem-solving, the timeframe of production targets, and the awareness of production targets.

Most papers we reviewed reveal a relationship between the leader's gender and the leadership style. They claim that female leaders follow transformational leadership styles while male counterparts prefer transactional ones. Furthermore, papers declare that female leaders positively affect firm performance through their transformational leadership styles. Supplementing our examination with CEO gender and investigating how this characteristic affects firm performance through leadership styles, we build the following hypotheses:

Hypothesis 3a: Female CEOs following transformational leadership styles positively affect firm performance regarding problem-solving.

Hypothesis 3b: Female CEOs following transformational leadership styles positively affect firm performance regarding the timeframe of production targets.

Hypothesis 3c: Female CEOs following transformational leadership styles positively affect firm performance regarding the awareness of production targets.

3. Data and Methodology

Our data source is World Bank Enterprise Surveys (WBES), and we use Ordinary Least Squares (OLS) regression models to test our hypotheses.

3.1 Data

Our WBES data source was implemented in Hungary between April 2023 and February 2024. This survey includes data for the 2022 fiscal year. The dataset was generated by interviews using the standard WBES questionnaire, which covered several topics in terms of business environment and business performance. Hungarian firms in WBES are randomly selected from the Hungarian Central Statistical Office database. Our dataset consists of 387 non-listed companies in the manufacturing sector. The ratio of female CEOs in our database is 16%. Regarding the data on leadership styles, the number of observations decreases because the database includes observations only for medium-sized and large companies.

3.2 Variables

Table 1 displays the descriptive statistics of variables used to evaluate our hypotheses.

Table 1. Descriptive statistics

Variable	Observation	Mean	Median	Std. dev.	Min	Max
Sales Growth Rate	387	0.25	0.20	0.32	-0.83	2.21
CEO gender	387	0.16	0	0.36	0	1
Size	387	94	28	278.80	4	3555
Age	387	23	23	16.27	1	171
R&D	387	0.22	0	0.41	0	1
Problem Solving	233	0.64	1	0.48	0	1
Awareness	227	0.54	1	0.50	0	1
Timeframe	227	0.72	1	0.45	0	1

Notes: This table represents the descriptive statistics for our dataset with a maximum of 387 data points. In Column 1, the number of observations is presented. Column 2 shows the average for each variable. Column 3 displays the median of the variables. Column 4 shows the standard deviation of each variable. Columns 5 and 6 show the minimum and the maximum values, respectively, *Sales Growth Rate*, *Size* and *Age* are continuous variables, and all the other variables are dummies.

The mean and median of CEO Gender suggest that significantly more men than women are in company CEO positions. For the firms, the average sales growth rate is 0.25. Furthermore, an average firm is 23 years old and operates with 94 employees.

The correlation results, displayed in Table 2, are all small in magnitude, which implies that collinearity cannot arise from the correlation of the variables included in the models (Dezsó & Ross, 2012).

Table 2. Correlation Table – only CEO Gender

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sales Growth Rate	1.00							
CEO Gender	0.02	1.00						
Problem Solving	-0.03	-0.17	1.00					
Timeframe	0.08	-0.01	0.08	1.00				
Awareness	-0.03	0.04	0.03	-0.06	1.00			
Ln Size	-0.05	-0.16	0.24	0.07	-0.08	1.00		
Ln Age	0.03	-0.10	0.09	0.03	0.04	0.22	1.00	
R&D	0.06	-0.09	0.15	0.02	0.11	0.18	-0.08	1.00

Notes: This table displays the correlation coefficients between the variables.

Before we start our analyses, we investigate whether our assumption that there is an initial difference between female and male CEOs in firm performance is correct. For this investigation, we create a density histogram. Figure 1 displays the probability density of sales growth rates for female and male CEOs.

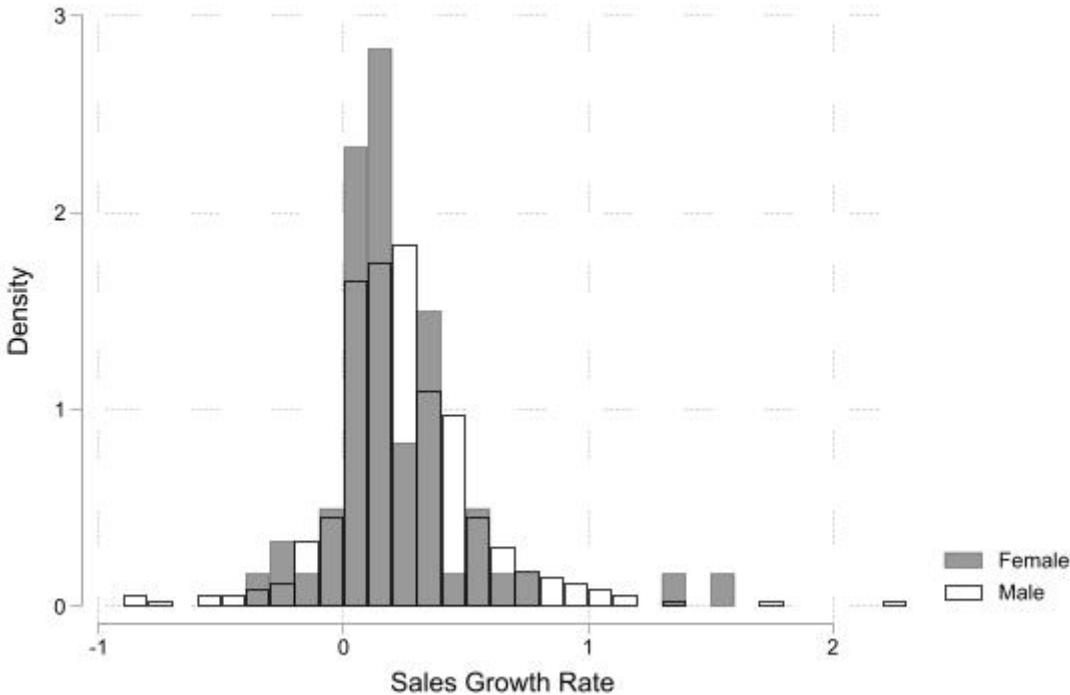
For female CEOs, more than half of the data lies in the bins from 0 to 0.2, and about three-fourths of the data lies between the 0 and 0.5 values of sales growth rate. In the case of male CEOs, about three-fourths of the data range from 0 to 0.5 values of sales growth rate, similar to female CEOs. However, the probability density in this range fluctuates less. Regarding the range between 0.5 and 1 values of sales growth rate, the density is higher for men than women in a CEO position. Furthermore, on the negative side, the density of sales growth rate between 0 and 0.5 is higher, while between 0.5 and 1 is lower for female CEOs than their male fellows. Additionally, the probability of densities of sales growth rates for male CEOs follows a normal distribution. In sum, the concentration of the highest probability density values around the

lowest sales growth rates for female CEOs suggests that women as CEOs could not improve the firm financial performance to a higher magnitude than male chief executives.

Based on the density histogram, we assume that there is a difference in firm performance between female and male CEOs.

Figure 1. Density histogram of sales growth rate for female and male CEOs

Notes: This figure shows the density histogram of sales growth rate for female and male CEOs. In the histogram, the Y axis represents the density, and the X axis shows the sales growth rate divided into 0.1 bins.



3.2.1 Dependent variable

To evaluate all the hypotheses, *Sales Growth Rate* will be the dependent variable in every case. *Sales Growth Rate* is constructed from the total annual sales reported by each firm for the fiscal years 2021 and 2022 using the following formula:

$$Sales\ Growth\ Rate = (Annual\ Total\ Sales\ in\ 2022 / Annual\ Total\ Sales\ in\ 2021) - 1 \quad (1)$$

3.2.2 Independent variables

To evaluate *Hypothesis 1*, we examine the impact of a female CEO on firm performance. Hence, we introduce CEO Gender as the independent variable. From the WBES, the variables

are constructed based on whether the top manager is female. CEO Gender is a dummy variable that takes the value 1 when the top manager is female and 0 otherwise.

To test our hypotheses regarding CEO gender and leadership styles, we create three new independent variables. These independent variables are dummies, which take the value 1 if the given actions correspond to transformational leadership style and 0 if it can be associated with transactional leadership style.

We created the variable called *Problem Solving* to study how CEOs approach problems when they arise. Bass et al. (2003) argue that transformational and transactional leaders differ in their behaviour when a problem emerges. Transactional leaders get involved in the process only when the problem arises, while transformational leaders closely monitor performance so that they can correct issues immediately.

Transformational CEOs engage in the prevention of repetitive failures after the initial problem is solved. On the other hand, transactional leaders do not take further action after the problem is solved. We construct the variable *Problem Solving* from the answers given to the question:

“Over fiscal year, what best describes what happened at this establishment when a problem in the production process arose?”

Problem Solving takes the value 0 when the answer can be associated with transactional leadership style, which holds for the following statement.

“We fixed it but did not take further action”.

Problem-solving categories from the dataset identified as the element of transformational leadership style, and taking the value 1, are the following:

“We fixed it and took action to make sure it did not happen again.”

“We fixed it and took action to make sure that it did not happen again, and had a continuous improvement process to anticipate problems like these in advance.”

We declare the variable *Timeframe* to examine how the timeline of production targets set by CEOs influences a firm's financial performance.

Leaders engaged in transformational leadership are strongly related to focusing on long-term goals, which behaviour is strongly related to better firm performance. Furthermore, transactional leadership is associated with focusing on short-term accomplishments (Geyer & Steyer, 1998).

Based on this concept, we define the variable *Timeframe* according to the answers to the following question:

"What best describes the time frame of those production targets?"

Timeframe takes the value 0 if the answer on the dataset is "Yes" for the following question, identifying the transactional leadership styles:

"Main focus was on short term, less than one year".

Timeframe takes the value 1 if the answer on the dataset is "Yes" for the following question, identifying the transformational leadership styles:

"Main focus was on long term, one year or more."

"Combination of short-term and long-term targets."

To study to what degree employees are aware of production targets at different company levels, we define the variable called *Awareness*. According to Koene et al. (2002), transformational leaders can make employees more aware and responsible for the company's production targets. More vital awareness enhances the quality of work and, therefore, increases firm performance.

Following transformational leadership implies that the CEOs share the production targets with all the managers and employees. Transactional leaders mainly involve top and senior managers in raising awareness of production targets. Hence, we construct the variable *Awareness* according to the following question:

"Who was aware of the production targets at this establishment?"

Awareness takes the value 0 when we identify the awareness of production target categories from data as the element of the transactional leadership style. Transactional leadership styles hold for the following cases:

"Only senior managers"

Awareness of production target categories from data identified as the element of transformational leadership styles, taking the value 1, are the following:

"Most managers and some production workers"

"Most managers and most production workers"

3.2.3 Control Variables

The inclusion of control variables in our regression model is crucial. It mitigates the potential bias from omitted variables and errors that may be correlated with the error term, thereby enhancing the robustness of our findings.

In line with Yasuda (2005), we add firm size (Ln Size), firm age (Ln Age), and R&D activity (R&D) to our model as control variables. The number of permanent, full-time employees measures firm size. Because the firm size distribution is unsymmetrical, we take the natural logarithm of the values to reduce data skewness. We take the natural logarithm of firm age for the same reason as the firm size.

Like Yasuda (2005), we measure R&D activity as a dummy variable. This control variable takes 1 if the firm invented research and development activity and 0 otherwise.

3.3 Methodology

We use Ordinary Least Squares (OLS) regression models and conduct cross-sectional analysis to test our hypotheses.

Firstly, for analysing the direct effect of female CEOs on the firm performance, we use the following model:

$$SG_i = \alpha + \beta_1 CEOG_i + \beta_2 LnSize + \beta_3 LnAge + \beta_4 R\&D + \varepsilon \quad (2)$$

The outcome of interest in equation (2) is the sales growth rate of the Hungarian manufacturing firms between 2021 and 2022, which SG_i denotes. The main coefficient of interest captures the effect of CEO Gender ($CEOG_i$) on the sales growth rate. The control variables are the natural logarithm of size and age: $LnSize$ and $LnAge$, and R&D activity ($R\&D$).

Secondly, to test the effect of the different leadership styles, the following OLS model is used:

$$SG_i = \alpha + \beta_1 CEOG_i + \beta_2 LS_{ij} + \beta_3 LnSize + \beta_4 LnAge + \beta_5 R\&D + \varepsilon \quad (3)$$

The outcome interest in equation (3) is unchanged compared to equation (2), the *Sales Growth Rate*. The coefficient of interest is β_2 capturing the different leadership styles (LS_{ij}): *Problem Solving* ($j=1$), *Timeframe* ($j=2$) and *Awareness* ($j=3$). The control variables in this equation are the natural logarithm of size and age and engagement in R&D activity.

Besides analysing the effects of the different leadership styles, we evaluate the joint effect of all three aspects of leadership styles with the following model:

$$SG_i = \alpha + \beta_1 CEOG_i + \beta_2 LS_{i1} + \beta_3 LS_{i2} + \beta_4 LS_{i3} + \beta_5 LnSize + \beta_6 LnAge + \beta_7 R\&D + \varepsilon \quad (4)$$

The outcome interest is *Sales Growth Rate*, and the coefficients of interest in equation (3) are β_2 , β_3 and β_4 , which are capturing the joint effect of transformational leadership styles regarding problem-solving, timeframe and awareness respectively. The control variables are unchanged compared to equation (3).

Thirdly, the regression model for testing the effect of female CEOs following transformational leadership styles on firm performance is the following:

$$SG_i = \alpha + \beta_1 CEOG_i + \beta_2 LS_{ij} + \beta_3 LS_{ij} * CEOG_i + \beta_4 LnSize + \beta_5 LnAge + \beta_6 R\&D + \varepsilon \quad (5)$$

In equation (5), the outcome interest remains the *Sales Growth Rate*. The control variables are also unchanged compared to equation (3). However, the coefficient of interest is β_3 capturing the effect of the interaction term between leadership styles and CEO gender. The LS_{ij} variables vary with the same structure in equation (5) as in equation (3), which implies that they represent *Problem Solving*, *Timeframe*, and *Awareness* when j takes the values 1, 2, and 3, respectively.

4. Results

We present the results of our regressions for testing hypotheses in the following paragraphs.

4.1 CEO gender and firm performance

Table 3 provides the outcomes of the OLS regressions by which we evaluate *Hypothesis 1*. The dependent variable in all columns is *Sales Growth Rate*. Column 1 in Table 3 shows the result of the OLS model, which only contains the dependent and independent variables and has no control variables. The estimated coefficient of *CEO Gender* is negative but insignificant.

The original model suffers from selection bias because this model does not contain variables related to the dependent variable. To account for selection bias, we study the effect of CEO gender on sales growth rate by adding control variables. Column 2 in Table 3 captures the effect of CEO gender on sales growth rate while controlling for size, age, and R&D activity. The coefficient estimate on *CEO Gender* is insignificant, implying no significant difference between the effect of female and male CEOs on the sales growth rate.

Among the control variables, *Ln Age* significantly positively affects sales growth rate at a 5% significance level. The firm age result aligns with the concept that firms can age like milk rather than wine (Coad et al., 2013). The sales performance of older companies is decreasing because

more mature firms are less capable of transforming resource growth into sales growth, profits, and productivity.

Table 3. Effects of CEO gender on sales growth rate

Variable	(1)	(2)
CEO Gender	-0.04 (0.04)	-0.04 (0.46)
Ln Size		0.02 (0.01)
Ln Age		-0.06** (0.03)
R&D		0.02 (0.04)
Constant	0.25*** (0.02)	0.33*** (0.09)
R ²	0.00	0.03
Number of observations	387	385

Notes: This table represents two regressions of *CEO Gender*. *CEO Gender* takes the value 1 when the CEO is female and 0 otherwise. The dependent variable for all the regression models is the *Sales Growth Rate*. Column 1 shows the results when only *Sales Growth Rate* and *CEO Gender* are in the regression model. Column 2 displays the results when we add *Ln Age*, *Ln Size* and *R&D* variables as controls to the model, where *R&D* is a dummy variable. The main statistic shown is the estimated coefficient per variable, and the statistic shown in the parenthesis is the estimated standard error. The final row lists the number of observations.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$.

Our results, which do not show a positive effect of female CEOs on firm financial performance, do not support *Hypothesis 1*. These findings are in line with the results of Bunea et al. (2023), Havran et al. (2020), Kramaric and Miletic (2022), and Mihail et al. (2021), who also argue that female CEOs do not deliver better financial performance than their male counterparts.

4.2 Leadership styles and firm performance

While evaluating *Hypothesis 1*, we analysed the entire database. To test the further hypotheses, we use a narrower dataset because leadership style data is available for companies with at least 20 employees.

Table 4. Effects of leadership styles on sales growth rate

Variable	(1)	(2)	(3)	(4)
Problem Solving	-0.03 (0.05)			-0.02 (0.05)
Timeframe		0.07* (0.04)		0.06 (0.05)
Awareness			0.04 (0.05)	-0.02 (0.05)
Ln Size	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.05)	-0.02 (0.02)
Ln Age	-0.01 (0.03)	-0.03 (0.03)	-0.03 (0.03)	-0.01 (0.03)
R&D	0.06 (0.04)	0.02 (0.04)	0.01 (0.04)	0.05 (0.05)
Constant	0.33** (0.12)	0.35* (0.13)	0.36** (0.12)	0.33*** (0.13)
R ²	0.01	0.02	0.01	0.02
Number of observations	232	225	225	211

Notes: This table represents four different regression models on leadership styles. In all columns, the dependent variable is the *Sales Growth Rate*. The independent variables of Columns 1-3 are, respectively, *Problem Solving*, *Timeframe* and *Awareness*, which takes the value 1 when the CEO engages in a transformational leadership style and 0 a transactional style. Column 4 studies the joint effect of all three areas of the leadership styles. The control variables in all columns are *Ln Size*, *Ln Age* and *R&D*, where *R&D* is a dummy variable. The main statistic shown is the estimated coefficient per variable, and the statistic shown in the parenthesis is the estimated standard error. The final row lists the number of observations.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$.

Hypotheses 2a, 2b, 2c, and 2d predict that the elements of transformational leadership styles positively affect firm financial performance individually and jointly. Columns 1-3 in Table 4 test the individual effect of the variables regarding leadership styles on the company's sales growth rate. In contrast, Column 4 evaluates the joint effect of all the variables on the firm performance. The dependent variable is *Sales Growth Rate*, and the independent variables are *Problem Solving*, *Timeframe* and *Awareness*. Similar to testing *Hypothesis 1*, we add *Ln Size*, *Ln Age* and *R&D* as control variables to our regression models.

Except for *Timeframe*, elements of transformational leadership styles do not significantly affect sales performance individually or jointly. *Timeframe* has a positive significant effect on the sales growth rate at a 10% significance level. With the exception of *Timeframe*, the regression results show no difference in a company's sales growth rate depending on whether the dominant leadership styles are transactional or transformational.

Regarding *Timeframe*, when the organisation's top management sets and strives for long-term and short-term production goals, it can improve its sales growth rate by 7 percentage points. According to our evaluation, we cannot reject *Hypothesis 2b*. In contrast, our results do not support *Hypothesis 2a, 2c* and *2d*. Not revealing a significant relationship between two of the three leadership styles and firm performance for medium and large companies is consistent with the results of Koene et al. (2002), who find a substantial effect of transformational leadership styles in small stores on firm performance while they cannot show similar influence in the case of large stores.

4.3 Leadership styles, CEO gender and firm performance

The next phase of our study involves evaluating *Hypothesis 3a, 3b* and *3c*. To do this, we add *CEO Gender* as an independent variable to our previous regression models. Additionally, to reveal the relationship between female CEOs following transformational leadership styles and firm performance, we introduce the interaction term between CEO gender and the examined elements of leadership styles.

To test *Hypothesis 3a*, we evaluate how female CEOs following transformational leadership styles regarding problem-solving affect firm performance. The baseline group consists of male CEOs with transactional leadership styles.

Column 1 in Table 5 displays the regression results controlling for size, age, and R&D activities. The dependent variable is the *Sales Growth Rate*. Our analysis presents that the coefficient of *Problem Solving* and the interaction term is negative, while the coefficient of *CEO Gender* is positive. However, none significantly affect the firm's performance. The insignificance of the coefficient of *Problem Solving*, *CEO gender*, and the interaction term suggests no significant difference exists between the effect on the sales growth rate of a female CEO following transformational leadership styles and a male CEO using transactional leadership styles when a problem arises. Therefore, we argue that our findings do not support *Hypothesis 3a*.

Table 5. Effects of CEO gender and leadership styles on sales growth rate

Variable	(1)	(2)	(3)
CEO Gender	0.03 (0.05)	0.12* (0.07)	0.74* (0.42)
Problem Solving	-0.02 (0.05)		
Problem Solving*CEO Gender	-0.05 (0.13)		
Timeframe		0.09* (0.05)	
Timeframe*CEO Gender		-0.15* (0.11)	
Awareness			0.08* (0.05)
Awareness*CEO Gender			-0.79* (0.42)
Ln Size	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Ln Age	-0.01 (0.03)	-0.02 (0.03)	-0.03 (0.03)
R&D	0.06 (0.04)	0.02 (0.04)	0.00 (0.04)
Constant	0.33** (0.12)	0.32** (0.14)	0.36** (0.13)
R ²	0.01	0.02	0.06
Number of observations	232	225	225

Notes: This table represents three different regressions of leadership styles. In all columns, the dependent variable is the *Sales Growth Rate*. The independent variables Columns 1-3 are, respectively, *Problem Solving*, *Timeframe* and *Awareness*, which takes the value 1 when the CEO engages in a transformational leadership style and 0 a transactional style. Besides the leadership styles, *CEO Gender* (takes the value 1 when the CEO is female, 0 otherwise) and the interaction term of the CEO gender and leadership style enter the model. The control variables in all columns are *Ln Size*, *Ln Age*, and *R&D*, where *R&D* is a dummy variable. The main statistic shown is the estimated coefficient per variable, and the statistic shown in the parenthesis is the estimated standard error. The final row lists the number of observations.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$.

To evaluate *Hypothesis 3b*, we study how female CEOs adopting transformational leadership styles regarding the timeframe of production targets affect firm performance. We present our results in Column 2 of Table 5.

While the estimated coefficients of the leadership styles and CEO gender are insignificant in Column 1 when we evaluate the timeframe of production targets regarding the leadership styles, the coefficients become significant at a 10% significance level. This significance indicates the different effects between female CEOs with transformational leadership styles and the baseline group on the firm's financial performance.

For the baseline group, including male CEOs who follow transactional leadership styles regarding the timeframe of production targets, which means that they focus on short-term aims instead of long-term strategic goals, the estimated value of sales growth rate represented by the constant is 32%. Looking at the individual effect of the variables, the sales growth rate provided by a CEO, driven by long-term vision rather than short-term performance, increases by 9 percentage points to 41% from the baseline. At the same time, the CEO's gender is unchanged. Additionally, a female CEO can raise the firm's sales growth rate by 12 percentage points to 44% from the baseline while she uses transactional leadership styles. The effect of a female CEO preferring transformational leadership styles on firm performance includes the individual effects of a female CEO and a CEO with transformational leadership styles, as well as the interaction effect. The negative coefficient of the interaction term implies that the sum effect of a female CEO setting long-term goals for her followers on the firm's sales growth rate is 15 percentage points less than the sum of the individual effects of a female CEO and a CEO with transformational leadership styles. In this case, the estimated effect of a female CEO with a transformational leadership style regarding the timeframe of production targets on the firm's sales growth rate is 6 percentage points, increasing the value of the baseline group from 32% to 38%.

Based on the regression outcomes, appointing a female CEO can develop the firm's sales growth rate. Since the effect of a female CEO who follows transformational leadership styles is significant and positive on the sales growth rate, we cannot reject *Hypothesis 3b*.

Column 3 in Table 5 shows the results of regression, which we conduct to test *Hypothesis 3c*. Our findings regarding the awareness of production targets are similar to the outcomes in terms of the timeframe of production targets. The estimated coefficients of *CEO Gender*, *Timeframe* and the interaction term are significant at a 10% significance level. The signs of the

coefficients of these variables are unchanged compared to the regression model in Column 2. The magnitude of the coefficient of awareness of production targets is close to the magnitude of the coefficient of the timeframe. However, the values of the estimated coefficient of the CEO gender and the interaction term between CEO gender and awareness are higher than those while studying the timeframe of production targets.

Looking at the baseline group, when a male CEO tracks his followers' performance and corrects their actions if they fail to meet the standards rather than share the company's long-term and short-term production targets with them, the estimated sales growth rate indicated by the constant is 36%. As the estimated coefficient of awareness shows, if a male CEO does not take corrective actions but inspires the employees to use their creativity to solve problems, he can increase the firm's financial effectiveness by 8 percentage points to 44%. A female CEO who prefers transactional leadership styles regarding the awareness of production targets can raise the company's sales growth rate by 74 percentage points to 120%. Similar to the estimated coefficient of the interaction term regarding the timeframe of production targets, the sign of the interaction term regarding awareness is negative. However, because the interaction effect size is smaller than the sum of the individual effects, a female CEO who shares the company's production targets with the employees and empowers them can improve the firm performance by increasing it from 36% to 39%. Since the effect of a female CEO adopting transformational leadership styles is significant and positive on the sales growth rate, we cannot reject *Hypothesis 3c*.

5. Robustness check

To assess the sensitivity of the model, we carry out robustness checks for the models we are using to evaluate this paper's hypotheses.

The original models contain the company size specification as a continuous variable. Since the WBES dataset also includes it as a categorical variable, we use that to test the robustness of the regression models. The categorical variables have three specifications: small, medium and large enterprises, respectively having 5 to 19, 20 to 99 and 100 or more employees.

Besides the modification of the size specifications of the company, the dependent variable, the independent variables, and the control variables remain unchanged.

We add categorical variables, namely *Medium Size* and *Large Size*, to our model, which evaluates the effect of female CEOs on firm performance. We use small firms as the reference category (see Appendix Table A.1.).

Following the modifications, the estimated coefficient of *CEO Gender* remains negative and insignificant, therefore on evaluating the effect of CEO gender the model is robust. From the control variables *Ln Age* lost its significance, and only *Medium Size* is significant at 10% level. This result suggests that medium-sized companies positively affect the sales growth rate compared to small enterprises.

In our dataset, companies responding to leadership styles are medium-sized or large. Therefore, when we assess the robustness of our models, which estimate the effect of CEO gender and leadership styles on firm performance, we add the dummy variable of *Medium Size* to the model and use large companies as the reference category.

As a result of our robustness check, we declare that the aspects of leadership styles, such as problem-solving, awareness and the timeframe of the production targets, the OLS models are not sensitive to modifying the size specifications of the companies. The coefficients of the leadership variables do not change sign or significance when company size categories enter the model (see Appendix Table A.2.).

While studying the effect of female CEOs on awareness and the timeframe of production targets, we experienced remarkable changes regarding the interaction term, which lost its significance in both cases. Furthermore, the coefficient of *CEO Gender* becomes insignificant for *Timeframe* as well (see Appendix Table A.3.).

Consequently, the models evaluating whether women following transformational leadership styles positively affect firm performance could be more robust.

6. Discussion and Conclusion

This paper studies the effect of CEO gender and leadership styles on firm financial performance. We assess our hypotheses using cross-sectional data from non-listed Hungarian manufacturing companies. Studying the effect of CEO gender without leadership styles, our analysis shows no difference in firm performance depending on whether a female or a male CEO leads the company. This result is consistent with the findings from the CEE region, where women in the CEO position do not exceed their male counterparts regarding firm financial performance.

The effect of female CEOs on firm performance can become slightly positive when they adopt transformational leadership styles. By setting long-term production targets and ensuring that managers and employees are aware of them, they can enhance the company's sales growth rate.

While interpreting our results, we must recognise the influence of social and organisational culture on women's roles in top management. At first glance, hiring a female CEO is not worth it because a woman in a top management position does not positively affect firm performance. This result is in line with research emphasising that the influence of female CEOs on firm performance depends on the characteristics of the economic sector. Manufacturing is a male-dominated industry, where masculine norms can prevent female CEOs from harnessing their unique capacity. For this reason, they are supposed to underperform their male peers (Eagly et al., 1992).

However, when we involve leadership styles in addition to CEO gender in our model, we experience that female CEOs following transformational leadership styles can enhance the company's sales growth rate. Our finding is contrary to the assumption that female CEOs cannot positively affect firm performance in manufacturing.

One possible interpretation of our results is that manufacturing companies that prefer transformational leadership styles appoint female CEOs whose leadership approach aligns with that of top management. This organisation is supposed to support gender egalitarianism and provide the same opportunity for women and men to gain top management positions. In such collaborative circumstances, female CEOs can harness their unique capacity to positively shape the firm's financial performance (Gipson et al., 2017).

One limitation of this study is that control variables, such as CEO qualification (Smith et al., 2006), CEO tenure (Li et al., 2019), and financial indicators used in previous papers and having a significant correlation with firm performance, are unavailable in the WBES dataset. As the low value of R^2 shows, this implies that our control variables can explain the cause-effect in a small amount. Another limitation is that the WBES database does not include panel data. Therefore, the available data does not allow us to examine company-specific and time-specific components by performing a fixed effect analysis, which method would better suit this type of research than a cross-sectional analysis (Vintila et al., 2014). In addition to the previous limitations, the WBES dataset includes data that can be linked to leadership behaviour but does not fit closely with any leadership theory. Based on Bass's theory (1990), this study

suggests a relationship between the data of WBES and transactional and transformational leadership styles, but this relationship does not imply precise alignment.

While our study provides evidence of the different effects of female and male CEOs on firm performance, it leaves room for clear reasons to explore. The differing performances of women and men in the CEO role may stem from their different leadership methods and mindsets (Hoobler et al., 2018). Understanding the direction of the effects between CEO gender, leadership styles, and firm performance is a crucial area for further research.

This paper concentrates on women in the CEO position. However, companies appoint women more in middle management than top management. Furthermore, most existing studies also focus on female CEOs and board members, making space for investigating how female managers in the secondary or third rows can influence the company's financial performance depending on their leadership styles and organisational environment.

7. References

- Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, 18(3), 19-31.
- Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8(1), 9-32.
- Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207.
- Bunea, M., Feleaga, L. I., & Ionescu, B. S. (2023). The CEO characteristics and Romanian banks performance. *Business Administration and Management*, 26(4), 99-118.
- Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or wine: Does firm performance improve with age?. *Structural Change and Economic Dynamics*, 24, 173-189.
- Dezsö, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal*, 33(9), 1072-1089.
- Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. (2003). Transformational, transactional, and laissez-faire leadership styles: a meta-analysis comparing women and men. *Psychological Bulletin*, 129(4), 569.
- Eagly, A. H., Karau, S. J., & Makhijani, M. G. (1995). Gender and the effectiveness of leaders: a meta-analysis. *Psychological Bulletin*, 117(1), 125.
- Eagly, A. H., Makhijani, M. G., & Klonsky, B. G. (1992). Gender and the evaluation of leaders: A meta-analysis. *Psychological Bulletin*, 111(1), 3.
- Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics*, 81, 83-95.
- Geyery, A. L., & Steyrer, J. M. (1998). Transformational leadership and objective performance in banks. *Applied Psychology*, 47(3), 397-420.
- Gipson, A. N., Pfaff, D. L., Mendelsohn, D. B., Catenacci, L. T., & Burke, W. W. (2017). Women and leadership: Selection, development, leadership style, and performance. *The Journal of Applied Behavioral Science*, 53(1), 32-65.
- Havran, D., Primecz, H., & Lakatos, Z. (2020). Does female presence on corporate boards impact firm performance? Evidence from listed firms in Central Eastern Europe. *Women in Management in Central and Eastern European Countries*. Baden-Baden: Nomos, 37-68.

- Hofstede, G., Hofstede, G. J., & Minkov, M. (2005). *Cultures and organizations: Software of the mind* (Vol. 2). McGraw-Hill Book Company.
- Hoobler, J. M., Masterson, C. R., Nkomo, S. M., & Michel, E. J. (2018). The business case for women leaders: Meta-analysis, research critique, and path forward. *Journal of Management*, 44(6), 2473-2499.
- Li, M., & Patel, P. C. (2019). Jack of all, master of all? CEO generalist experience and firm performance. *The Leadership Quarterly*, 30(3), 320-334.
- Khan, W. A., & Vieito, J. P. (2013). CEO gender and firm performance. *Journal of Economics and Business*, 67, 55-66.
- Koene, B. A., Vogelaar, A. L., & Soeters, J. L. (2002). Leadership effects on organizational climate and financial performance: Local leadership effect in chain organizations. *The Leadership Quarterly*, 13(3), 193-215.
- Kramaric, T. P., & Miletic, M. (2017). Critical mass in the boardroom of Croatian banks. *South East European Journal of Economics and Business*, 12(1), 22-37.
- Kramaric, T. P., & Miletic, M. (2022). Does board gender diversity play significant role in determining firm performance? The case of Croatian largest manufacturers. *Zbornik Veleucilista u Rijeci*, 10(1), 1-19.
- Kramaric, T. P., Milun, T., & Pavic, I. (2016). Does gender diversity in the boardroom influence Tobin's Q of Croatian listed firms. *International Journal of Economic Sciences*, 5(3), 50-65.
- Mihail, B. A., Dumitrescu, D., Micu, C. D., & Lobda, A. (2021). The impact of board diversity, CEO characteristics, and board committees on financial performance in the case of Romanian companies. *Journal of Risk and Financial Management*, 15(1), 7.
- Nagy, B. (2005). Gendered management in Hungary: perceptions and explanations. *Women in Management Review*, 20(5), 345-360.
- Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of Productivity and Performance Management*, 55(7), 569-593.
- Torchia, M., Calabrò, A., & Huse, M. (2011). Women directors on corporate boards: From tokenism to critical mass. *Journal of Business Ethics*, 102, 299-317.
- Vintila, G., Onofrei, M., & Gherghina, S. C. (2014). Corporate Governance Context on Women's Representation in Top Management Positions and Listed Companies Value. *Revista de Cercetare si Interventie Sociala*, 44.

Appendices

Table A.1. Robustness Check – The effect of CEO gender on sales growth rate

Variable	(1)
CEO Gender	-0.50 (0.05)
Medium Size	0.07* (0.04)
Large Size	0.02 (0.04)
Ln Age	-0.05 (0.03)
R&D	0.03 (0.04)
Constant	0.36*** (0.08)
R ²	0.02
Number of observations	385

Notes: This table represents the results of the robustness check conducted with the size specifications *Large Size*, *Medium Size* and *Small Size*, where *Small Size* is the reference category for the regression model evaluation Hypothesis 1.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. Standard errors are reported under each coefficient in parentheses.

Table A.2. Robustness Check – The effect of leadership styles on sales growth rate

Variable	(1)	(2)	(3)	(4)
Problem Solving	-0.01 (0.07)			-0.02 (0.05)
Timeframe		0.07* (0.04)		0.06 (0.05)
Awareness			0.03 (0.06)	-0.03 (0.05)
Medium Size	0.05 (0.02)	0.06 (0.04)	-0.01 (0.07)	-0.07 (0.04)
Ln Age	0.00 (0.03)	-0.02 (0.03)	-0.02 (0.03)	0.00 (0.03)
R&D	0.06 (0.04)	0.02 (0.04)	0.01 (0.04)	0.05 (0.05)
Constant	0.19** (0.10)	0.24* (0.11)	0.27** (0.11)	0.21* (0.12)
R ²	0.02	0.02	0.02	0.02
Number of observations	232	225	225	211

Notes: This table represents four different regression models on leadership styles. In all columns, the dependent variable is *Sales Growth Rate*. The independent variables in Columns 1-3 are, respectively, *Problem Solving*, *Timeframe* and *Awareness*, taking the value 1 when the CEO engages in transformational and 0 in transactional leadership styles. Column 4 studies the joint effect of all three aspects of the leadership styles. The control variables in all columns are *Ln Size*, *Ln Age* and *R&D*. The main statistic shown is the estimated coefficient per variable. The final row lists the number of observations.

*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. Standard errors are reported under each coefficient in parentheses.

Table A.3. Robustness Check – The effect of CEO gender and leadership styles on sales growth rate

Variable	(1)	(2)	(3)
CEO Gender	0.02 (0.08)	0.10 (0.07)	0.74* (0.42)
Problem Solving	-0.01 (0.05)		
Problem Solving*CEO Gender	-0.05 (0.13)		
Timeframe		0.01* (0.05)	
Timeframe*CEO Gender		-0.15 (0.10)	
Awareness			0.08* (0.05)
Awareness*CEO Gender			-0.80** (0.42)
Medium Size	-0.06 (0.13)	0.07 (0.02)	0.07 (0.04)
Ln Age	-0.01 (0.03)	-0.02 (0.03)	-0.03 (0.03)
R&D	0.06 (0.04)	0.02 (0.04)	0.00 (0.04)
Constant	0.23** (0.12)	0.21** (0.14)	0.25** (0.11)
R ²	0.02	0.03	0.07
Number of observations	233	225	225

Notes: This table represents three different regressions of leadership styles. In all columns, the dependent variable is *Sales Growth Rate*. The independent variables in Columns 1-3 are, respectively, *Problem Solving*, *Timeframe* and *Awareness*, taking the value 1 when the CEO engages in transformational and 0 in transactional leadership styles. *CEO Gender* (takes the value 1 when the CEO is female, 0 otherwise) and the interaction term of the CEO gender and leadership styles enters the model. The control variables in all columns are *Ln Size*, *Ln Age*, and *R&D*. The main statistic shown is the estimated coefficient per variable. The final row lists the number of observations. *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.10$. Standard errors are reported under each coefficient in parentheses.